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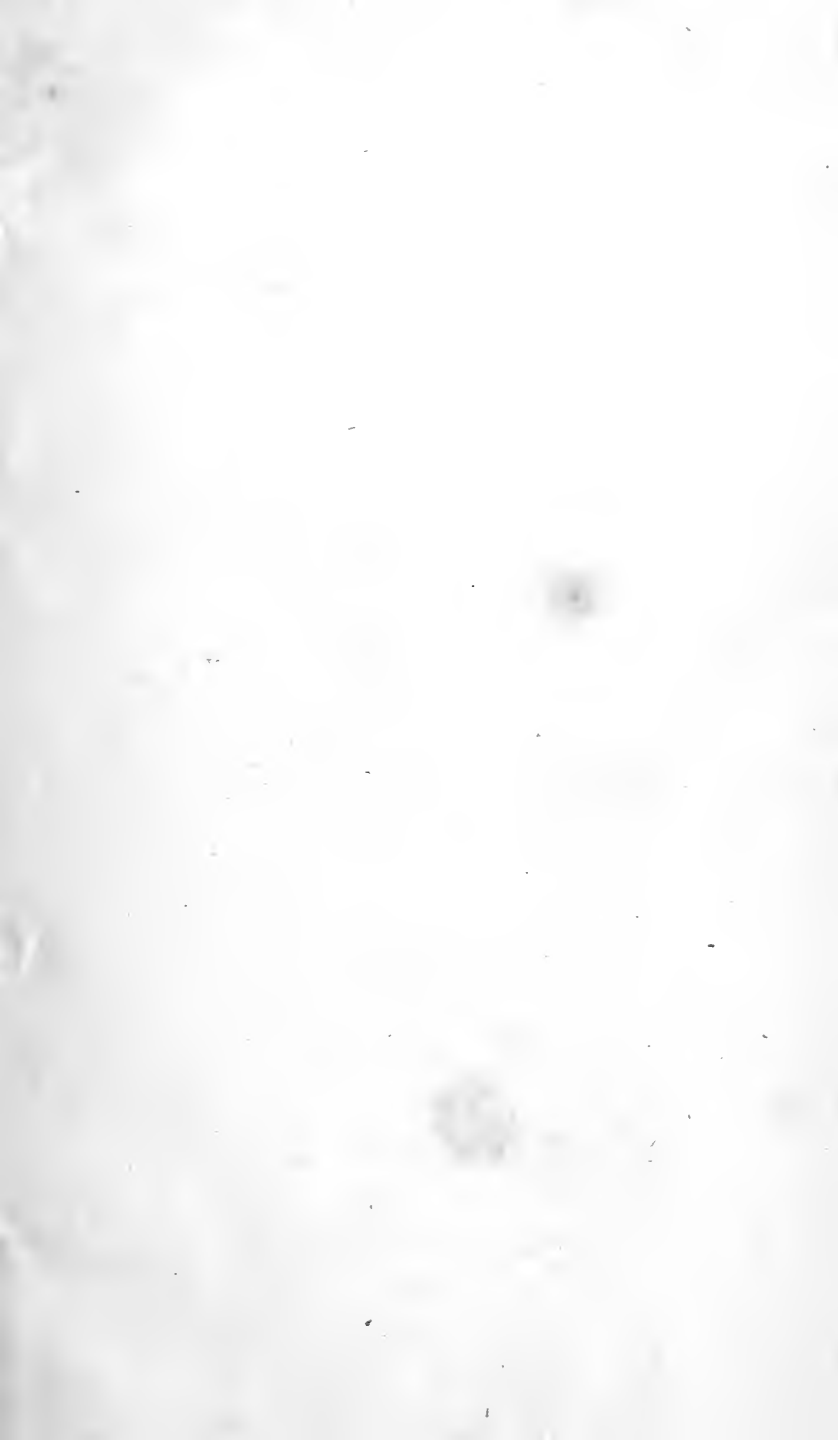
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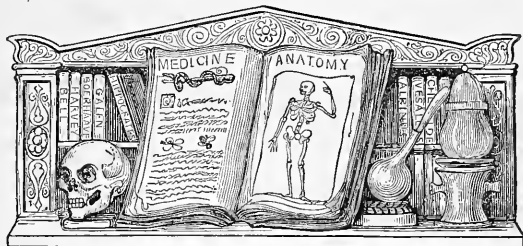




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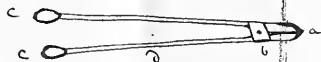
Sir

In those cases of difficult parturition where the dimensions of the pelvis are such as in the famous case where Dr. Osborn delivered (El. Sherwood), or where they are in general under 3 inches by $1\frac{1}{2}$ in the two diameters, we are of opinion that matter might still be terminated with little comparative danger to the mother, and in every case without having recourse to that horrible & fatal operation the Cesarean. The practice we would propose in some degree resembles that with Dr. Syon's forceps, in diminishing the basis of the skull to a still greater degree after all that has been detached by the crotchet has been extracted but the forceps of Dr. Syon is faulty in this, that you can only diminish the bones by twisting & pressing them in their jagged state against the parts of the mother, & thereby producing great & often irreparable injury to the mother, before you can in any considerable degree diminish the basis of the skull or those bones attached to it.

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the sharp angular edges of the perforator would injure the parts of the mother, & several disadvantages would attend its introduction & use from having a sharp point, which would be dangerous & troublesome in quivering; besides if a firm piece of bone were fixed between these slender points they might bend in cutting it asunder.

The general form of the instrument might resemble the following scrol — for I am no drawer.



The length of the whole instrument might be $12\frac{1}{2}$ inches, and the fulcrum *b* be so situated that *ba* shall be equal to 2 inches, & *cb* of course equal to $10\frac{1}{2}$. The ends of the handles should be made of an oval figure, so that we may either compress them by the finger & thumb, or hold them in the palm of the hand according to the force required to divide the bone between their edges. That the instrument may be light & strong at the same time, the handles should be broad in the plane of the instrument (as represented), & thin in the other direction. The point should always be of that rounded & obtuse form represented.

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Having had the good fortune of lately being one of your pupils & thereby knowing your professional abilities & zeal, I have ventured to submit this speculation to you — if it is really a dream & unworthy of the light, condemn it to that oblivion it deserves; but if it can be realised make what use of it you please, give it to the editor of Edm Journal, &c.

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IN order to understand the appropriate treatment of women during lying-in, it is necessary to describe the condition of the system which follows the act of human parturition.

Considerable exhaustion, both of the muscular and of the sensorial power, must be the consequence of the exertions and the sufferings occasioned by the expulsion of the infant and secundines, and of course the degrees of this exhaustion must correspond with the violence and the duration of labour and the previous state of health of the patient. But in ordinary cases the debility is temporary only, and therefore the corporeal changes which fol-

low the birth of the infant require the chief attention of the practitioner.

It must be evident, that when delivery takes place, the pressure upon the contents, and upon the containing parts of the abdomen is suddenly removed, that the current of blood to the uterus is diminished or altered, and that the internal surface of that important part is literally studded with the extremities of ruptured blood vessels. Overwhelming hæmorrhagy would follow the separation of the secundines, but for the contraction of the womb. The effect of this contraction is such a thickening of its substance as not only to compress the trunks of the vessels which had run into the secundines, but also to occasion retraction and constriction of their ruptured extremities, the natural structure of which is well adapted for this purpose. Previous to labour, the thickness of the parietes of the uterus does not much exceed a quarter of an inch, but after delivery it is at least an inch and an half.

This natural process is exactly what surgeons imitate in the amputation of the limbs. By the tourniquet they compress the chief arteries of the part, they apply ligatures to the divided extremities of the larger branches, and they trust to compression for promoting the retraction of the more minute ruptured ramifications. These circumstances explain the faintings and the floodings which are apt on some occasions to supervene to delivery.

A discharge of blood, more or less considerable, generally follows the expulsion of the after-birth. This lessens in proportion to the contraction of the uterus, and that contraction can usually be without difficulty recognized by the application of the hand to the lower part of the belly.

The flow from the uterus gradually undergoes certain changes in its character and appearance, becoming first bloody serum, then milky like or purulent, then greenish or brownish, with an offensive smell, and acquir-

ing an acrimonious quality tending to excoriate the external parts, and finally, colourless and inodorous previous to its ceasing altogether. This discharge, technically styled the lochia (in vulgar language the cleansings) varies in appearance, in quantity, and in duration, not only in different women, but in the same woman in different lyings-in, and it never naturally ceases till the uterine system be restored, or nearly so, to its ordinary condition in the unimpregnated state.

After the shock occasioned by the violence of the labour has subsided, the current of blood is directed from the uterus to the mammæ, and the secretion of milk begins, and this new function is commonly productive of a considerable disturbance of the general system, constituting what is called the milk-fever, the violence and duration of which are influenced chiefly by the circumstance of the woman nursing the infant or discouraging the milk.

But the most important change in the frame of a lying-in woman has been hitherto disre-

garded, if not misunderstood by the profession, viz., the reduction of the uterine system to the condition in which it had been previous to impregnation.

Even the latest authors have attributed this wonderful change to the most trifling causes, such as mechanical contraction, pressure of the circumambient parts, &c.

Monsieur Murat expressly says, in his article on the Lochia, (vol. 28 of the Dictionaire des Sciences Medicales, page 517),—“ Ce viscère, (viz. la Matrice) débarrassé du fœtus et de ses dépendances, use des mêmes forces qui l’ont délivré, pour rentrer dans ses premières limites; mais cette réduction d’un volume très-grand à un très-petit, n’est jamais instantanée; avant qu’elle soit complete, il se passe un temps plus ou moins long. A mesure que la matrice revient sur elle-même, les vaisseaux qui pénètrent dans l’épaisseur de ses parois laissent d’abord pleuvoir des flots de sang qui s’échappent par leurs orifices encore béans; mais

bientôt ces vaisseaux, se resserrant peu à peu avec cet organe et dans des proportions correspondentes, deviennent plus flexueux et leur calibre diminue ; aussi le sang coule en plus petite quantité et est moins coloré ; quelquefois, au bout de deux ou trois heures, il ne sort guère que des caillots noirâtres plus ou moins volumineux. La matrice continuant de revenir sur elle-même, les orifices de ses vaisseaux ne fournissent bientôt qu'une sérosité roussâtre, qui prend plus tard de la consistance, une apparence puriforme, une couleur blanchâtre, et acquiert une odeur particulière que l'habitude apprend à distinguer."

Dr Ramsbotham has adopted this opinion. He says (vol. i., page 62), " A contractile effort is continued, which produces, from day to day, a still more perceptible diminution, and proceeds till the uterus has acquired its pristine size. Along with the contractile effort, we have a material abstraction of the vascular supply. By the assistance of these agencies the uterus is at length restored to a state, under

which it is again capable of impregnation. Absorption has little to do in this part of the process.

“ This contractile effort is, soon after delivery, and indeed for the first few days, attended with pain, which returns at long intervals, but gradually subsides ; it is afterwards performed in so silent manner, that the patient is ignorant of its progress.”

Practitioners who have thus explained the restoration of the uterine system to its condition in the unimpregnated state, have not been aware that, during pregnancy, there is a progressive addition to the actual substance of the uterus and vagina, which cannot be removed either by contraction or pressure. It must be by absorption, and for this purpose all the lymphatics connected with the organs in question, take on, from the moment of delivery, an increased degree of activity, and the effects of this new action are very different in different individuals. Since the object of this work is strictly practi-

cal, the author is anxious to avoid every discussion which can be regarded as controversial. He could have no difficulty in proving to Dr Rambotham, that where the bulk of any part of the human frame is diminished by compression, the mechanical effect is an increased activity of the absorbents, as well as a diminished supply of blood.

Besides original differences in natural constitutions or habits, there is every reason to believe that those extensive changes after delivery are materially influenced by the state of health of the patient previous to pregnancy. In persons of a delicate feeble constitution, the return of strength, and the reduction of the uterine system, must proceed slowly and imperfectly, while in those of an inflammatory diathesis, the slightest circumstances must tend to produce altered determination of blood, and hence to excite inflammation in different parts, more particularly in those parts connected with the lymphatics of the lower extremities. In nervous and hysterical constitutions, various complications of disease are apt to occur.

Again, where there has been unusual suffering during labour, the ordinary changes after delivery cannot be expected to proceed in a healthy regular manner, because the exhaustion of sensorial power must more or less paralyze the minute internal actions of every part of the system. *Secondly*, the violent pressure to which all the parts concerned in the mechanism of labour had been subjected, must excite an unusual tendency at least to inflammation; and, *thirdly*, the long continued and violent action of the respiratory organs must not only render them liable to derangement, but by their influence upon the capillaries of every part of the body, must occasion an inequality of circulation that may prove highly injurious.

From this brief sketch of the changes which take place after delivery, it is obvious that in the treatment of lying-in women, the attention of the practitioner should be particularly directed to the state of the sensorial power—of the respiratory organs—of the contents and containing parts of the abdomen—of the pro-

gressive changes on the uterine system—and of the mammæ and the secretion of milk.

The altered condition, too, of the circulating mass requires attention, for it must be influenced partly by the absorption of the substance which had been added to the uterus and vagina during pregnancy, and partly of that of the milk which takes place, in a greater or less degree, in every instance.

These circumstances readily account for the difference in the recovery of different individuals during lying-in. Where the labour has been easy,—where the woman has been in robust health previous to delivery,—where she has been accustomed to a life of industry, and to regular exercise in the open air, if she escape flooding immediately after delivery, or febrile or inflammatory diseases during the first week, her recovery proceeds rapidly. But if she have been accustomed to idleness and to luxurious living,—have been much secluded from the open air ; and, in short, have been habituated to the

indulgences of the higher ranks, her recovery must go on slowly, for while there is such an increased susceptibility of impression of the nervous system, that the most trifling circumstances excite alarm or agitation, there is such a langour in the action of the lymphatics, that the reduction of the uterus proceeds tardily and imperfectly. In such individuals, too, diminished energy of the chylopoetic viscera is a common occurrence, and hence indigestion with all its consequences.

Women of that description, therefore, are liable, besides the ordinary accident of hæmorrhagy after delivery, to various nervous and sympathetic affections from which the healthy individuals of the lower ranks are exempted.

Notwithstanding these most important differences, there are certain morbid affections to which all women are for some time after delivery liable; such are faintings, floodings, sudden suppression of the lochial discharge, and inflam-

mation of the contents of the abdomen, or of the thorax.

Having thus described the condition of the woman after delivery, the mode of treatment is next to be considered.

As soon as the placenta is detached, moderate and equable compression of the abdomen, by means of a suitable roller, ought to be made without delay. Where there has been great distension of the parietes of the abdomen, one or more cloths, folded up in the form of a compress, should be interposed between the binder and the lower part of the belly, for the purpose of making steady pressure upon the uterus.

The importance and the utility of this practice must be so obvious, that it is wonderful it should ever be dispensed with, and yet, in many parts of England, there is reason to believe that it is not adopted. Nothing but deference to the high authority of the late Dr Denman can account for this, because any medical practi-

tioner of common understanding, if left to the unbiassed exercise of his own judgment, would see at once, not merely the utility, but the absolute necessity of this practice.

Dr Denman says (page 437), “ Some years ago it was a general custom to bind the abdomen very tight immediately after delivery, with the view of aiding the contraction of the integuments, and of preserving the shape of the patient. In some countries,—India in particular, this is practised to a degree that one cannot think of without shuddering at the mischief which must of necessity be very often occasioned. In this country, the practice has been very much discountenanced, as useless and pernicious, and it is now wholly or nearly laid aside, till five or six days after delivery, when a broad band, daily, but very gradually drawn a little tighter, may be applied, not only without injury, but with some advantage.”

It is a most extraordinary circumstance, that Dr Denman, in the very next paragraph, ad-

mits, "that one of the first and not an uncommon consequence of delivery, is faintness," and that "this may proceed from sudden emptying of the abdomen and its consequent changes."

That surgeons, after the operation of tapping for ascites, deem it necessary to compress the abdomen is indisputable, and the reason for the practice is a dread of faintness from the sudden emptying of the abdomen. It must appear, therefore, that after the act of human parturition, there should be the same necessity for supporting the parietes of the abdomen. But there is an additional, and still more important object to be attained by this practice, and that is, securing the due contraction of the uterus, in order to prevent hæmorrhagy upon the principles already stated.

Experience has led Dr Ramsbotham to a due appreciation of the importance of assisting the contraction of the uterus. His observations, (part i., page 186, *et. seq.*), are most valuable,

and cannot be too strongly impressed upon the mind of every young practitioner.

While Mons. Marc recommends this practice, he does not seem aware that the continued compression of the abdomen, till the woman recover entirely from lying-in, seldom fails in healthy individuals to restore in a great degree the elasticity of the abdominal parietes. He says, (vol. vii., page 157 of the *Dictionnaire des Sciences Medicales*.)

“ Les parois du bas-ventre restent souvent flasques, pendantes après l'accouchement. On observe chez le plus grand nombre des femmes, des rides, des vergetures, ces dernières doivent être considérées comme de vraies varices des veines cutanées de l'abdomen. La dilatation excessive qu'elles acquièrent pendant la grossesse, leur fait perdre leur ton naturel. Pendant longtemps on a regardé les astringens, les spiritueux, comme des moyens propres à disposer ces parties à reprendre leur élasticité

naturelle ; mais l'expérience prouve qu'on n'en obtient aucun effet marqué."

But the result of the author's experience is very different. Where suitable attention has been paid, the relaxation of the parietes of the abdomen has always been removed, and in several cases where, from neglect and mismanagement during successive lyings-in, the individual had such a state of the belly that the parietes hung over the pubes like an apron, keeping up a constant irritation and excoriation on the surface of the groins and upper part of the thighs, he has succeeded in removing that unseemly and uncomfortable condition of the person after a subsequent delivery, by means chiefly of stimulant frictions and pressure.

While confined to bed, any ordinary binder that shall give firm support to the whole belly from the ensiform cartilage to the pubes will be found sufficient. In applying this binder, the patient's body-dress may be shifted in ordinary cases. When the woman begins to sit

up, a well adapted belt, with whalebones behind, and straps and buckles before, ought to be worn, not only till the uterine system be restored to its natural state, but also till the patient can walk without feeling weakness of the back.

In this part of the world, every woman, whatever her rank may be, remains in the bed on which she had been delivered, for at least twenty-four hours, and, of course, certain means are employed to render the bed comfortable. The state of the bedding must be regulated by the season of the year. It can scarcely be too light. Much danger must be incurred (at least in many cases) by the practice alleged to be common upon the Continent, of removing the woman from one bed to another immediately after delivery.

After a warm cloth has been applied to the external parts (to be renewed occasionally as it becomes soiled) the patient is to be allowed some mild nourishment, such as panada, or

gruel, or sago, or some other farinaceous matter, or tea, with toasted bread, and should be encouraged to compose herself to rest, under the surveillance of a skilful attendant.

Directions are to be given that the patient make water as soon after delivery as circumstances will permit. For this purpose she must be requested to turn round upon her knees, by which any coagula accumulated within the vagina will be readily expelled. Much injury has in many cases, according to the experience of the author, arisen from inattention to this apparently obvious and simple precaution.

Every woman in the better ranks ought to be visited within a few hours after delivery. At that visit it is proper that the general directions for her treatment should be minutely explained, and it is expected that she be seen at least daily till her recovery is established. The practice in the lower ranks must be adapted to the circumstances of such patients. No conscientious practitioner can feel satisfied

with paying only a single visit after having delivered a person of that description.

The first circumstance to be insisted upon is, quiet in every sense of the word, and all the ordinary precautions for securing this ought to be suggested. The higher the rank of the patient, the more necessary is it to be particular in enforcing attention to this point. While every thing which can possibly make an injurious impression upon the senses of hearing or seeing should be carefully guarded against, there are two errors in this respect which are apt to be committed. The one is, whispering instead of speaking in an under tone, and the other is, keeping the room darkened instead of being merely shaded from the glare of light.

From the moment of delivery it is of the utmost importance to attend to the state of the nervous system. In some individuals slight circumstances increase in a wonderful degree their susceptibility of impression ; and if this be overlooked, very serious consequences follow.

This increased susceptibility may be readily distinguished by a little attention. The action of the heart and arteries is accelerated, the slightest degree of light or noise affects the eyes or ears, symptoms which are aggravated by the approach even of the medical attendant; the sleep is disturbed by unpleasant dreams, and while awake the patient is unquiet and restless. It may be added, that the most trifling emotion is apt to produce chilliness or burning heat of the surface, or headache, and in some individuals even delirium.

Various means are required to prevent or to remove this increased susceptibility of impression, but in the greater number of cases it will be found that the following treatment answers the purpose :—

Instead of the farinaceous diet, which in ordinary cases ought to be enjoined for the first few days, chicken broth or boiled chicken ought to be recommended, and even in some cases a moderate proportion of diluted wine.

Any attempt at suckling the infant should be discouraged, for in certain constitutions the drain of milk, independent altogether of the fatigue, is apt to occasion very serious nervous affections, such as Melancholia, &c.

Six or eight hours of uninterrupted sleep every twenty-four hours should, if possible, be procured. For this purpose, the various preparations of opium, of hyosciamus, of camphor, of the volatile alkali, of the nitrous æther, of hops, of snakeroot and of valerian must be prescribed according to the constitution and habit of the individual. The musk and castor formerly so extensively employed, have now fallen into disrepute. But in cases of violent palpitation of the heart, the musk will be found superior to every other medicine, provided it be administered in a sufficiently large dose. The author has invariably prescribed in similar cases two scruples, that is, forty grains, as the smallest dose.

Until the end of a fortnight at least, a dose

of camphor, or of the volatile alkali combined with the nitrous æther, should be given every two or three hours while awake, and whenever there is any threatening, either of change of temperature upon the surface, or of agitation of the mind, immediate measures should be adopted to arrest the progress of such symptoms.

As soon as the reduction of the uterus is sufficiently advanced, a course of tonics, adapted to the constitution of the patient, should be prescribed. In general, however, it will be found that the myrrh is the best tonic in such cases.

Ventilation is the next circumstance to be attended to. The air which surrounds a lying-in woman ought not only to be as pure as possible, but ought also to be kept at a very moderate temperature. It should never exceed 60° of Fahrenheit's scale, that is about 12½° of Reaumur.

c Sufficient attention, according to the author's

opinion, has not been paid to this precept, and yet a little reflection must shew its great importance.

From the shock which the respiratory organs had sustained during the act of parturition, they must be highly susceptible of impurities of the air, and from the excited state of the capillaries from the same cause, heated air cannot fail to prevent their restoration to their natural condition. It may be therefore truly said, that impure and heated air has been a principal cause of those diseases of debility, which in former times in Great Britain were so prevalent during lying-in, and which were alleged to be evidences of a putrid diathesis.

Personal cleanliness is much more necessary than might be supposed. The exudation on the surface which naturally takes place for a longer or shorter time after delivery, is not only of a deleterious nature, but is also apt to produce injurious effects, in consequence of the increased susceptibility of the superficial respiratory nerves.

In general, frequent changes of bed and body linen are sufficient for this purpose, but wherever there is any apparent febrile or irritated state of the system, the whole surface of the person should be carefully bathed, by means of a sponge, with tepid vinegar and water, at least evening and morning, for the first few days, carefully drying one part before bathing another.

As soon as the patient can bear the fatigue, the external parts are to be bathed with warm milk and water, and afterwards as long as there is any uterine discharge the same parts are to be daily sponged with warm spirits and water, in the proportion of one part of proof spirit to two parts of water. This practice has been objected to by Monsr. Marc, in the article already referred to, in the following words :—

“ Dans les premiers jours, les lotions astringentes ou spiritueuses, auxquelles on a recours pour reserrer les parties génitales, seraient dangereuses ; elles augmenteraient la douleur, et

pourraient supprimer les lochies. On ne peut les employer sans inconvénients, qu'après la cessation complète de l'écoulement des lochies. Pour les conseiller, même à cette époque, il faut que la femme reste sujette au relâchement du vagin ou à une descente de matrice."

Experience has completely established, according to the observation of the author, the fallacy of this reasoning. He has never known the lochial discharge arrested by any stimulant or astringent application to the external parts. But he has invariably found that such applications contribute in an essential degree to the restoration both of the uterus and of the vagina (with its external extremity) to their natural healthy condition in the unimpregnated state. He was led to the practice by reasoning, for he considered that such is the sympathy between every part of the uterine system, that stimulants applied to the absorbents of one part must influence the absorbents of the whole, and he has not been disappointed in the result of this reasoning. For many years past he has an-

nually seen numerous cases of chronic enlargement of the uterus, relaxation of the vagina, &c., with all the unpleasant complaints attendant upon such a state of those parts, which, according to his firm belief, were the consequence of the neglect of this simple practice.

The diet of lying-in-women requires particular attention.—When the patient has been in previous good health, and her labour has been natural, regard must be had to her ordinary mode of living, and to the circumstances of her suckling her infant or discouraging the milk.

Mild, easily digested food must be selected, and every thing stimulant or irritant must be prohibited. It is obvious that, where there is an inflammatory diathesis, and while the commotion excited by the act of parturition, and by the beginning secretion of milk continues, nothing but farinaceous diet should be allowed.

Warm diluents, whether in the form of infu-

sions or decoctions, or soups, are in general injurious for the first fortnight. They tend to increase the mass of circulating fluids, and, at the same time, to relax the skin, and to oppress the chylopoetic viscera. Whether the woman give suck or discourage the milk, her diet should consist as much as possible of dry food, for a certain time at least.

After the tenth or twelfth day, the restrictions in diet may be relaxed according to circumstances,—that is, the proportion of animal food may be increased, and wine or other fermented liquors in moderation may be permitted, if the patient suckle her infant, or if the delicacy of her constitution require nourishment and tonics. It may, however, be laid down as a general rule, that, till the lochial discharge cease entirely, and other evidences of the reduction of the uterus to its natural state take place, the mildest articles of food should be insisted upon. There are many cases upon record, attested by men of great integrity and competent knowledge, where indigestible

substances received into the stomach have suddenly produced the most alarming effects.

In Britain this has been remarkably illustrated in the case of the lower ranks in great manufacturing towns, for instances annually occur amongst patients of that description, where indulgence in indigestible viands and malt liquors, is followed by fatal diarrhea or cramp of the stomach.

The next direction to be given should relate to the evacuations from the bowels, and the author has reason to believe that the importance of attention to this point is not sufficiently appreciated by practitioners, and especially by foreign practitioners.

During the latter months of pregnancy there is a natural tendency to torpor of the bowels. This is probably owing to that increased power of the digestive organs, by which the nutritious parts of the food are assimilated, and by which no other than the earthy portions are

rejected, rather than to the mechanical pressure of the uterus upon the abdominal viscera, an opinion formerly adopted by many respectable authors.

Whether this reasoning be admitted or not, the fact is certain, that in all women, but especially in women of the lower ranks, an accumulation of hardened fæces in some degree or other is apt to take place previous to delivery ; and although the contents of the rectum are mechanically expelled in the progress of the birth of the infant, accumulations in the colon, and especially in the caput cœcum very frequently remain.

When it is further considered that, from the moment of delivery, an absorption of what had been added to the uterine system takes place, as already explained, and that this absorbed matter must be thrown off by the ordinary emunctories, the absolute necessity for regulating the actions of the bowels cannot for a moment be doubted.

Two objects are to be kept in view in fulfilling this indication, viz.,—to remove accumulated fæces, and to stimulate the lymphatic system, by producing an increased discharge from the surface of the intestinal canal.

Much misapprehension appears to prevail respecting the selection of medicines, which promote the peristaltic action of the intestines, and yet it is understood that all such medicines produce two effects, for they increase the secretions from the surface of the bowels, and they excite the action of the muscular fibres of the gut. It is also well known, that some medicines act principally in one of those respects. For example, certain neutral salts increase greatly the secretion from the surfaces of the bowels, while castor oil probably does little more than stimulate the intestinal fibres. Some medicines, too, seem to have a specific influence on particular portions of the alimentary canal. Rhubarb, for example, acts upon the duodenum, and aloes upon the great guts.

Without attention to those effects of aperient medicines, it is impossible for a practitioner to decide upon those which ought to be directed in the case of lying-in-women, but there are some general rules, by the adoption of which, the ordinary errors committed in this respect, may perhaps be avoided.

Firstly, Unless it be unequivocally ascertained that the bowels have been regularly cleared previous to delivery, a dose of castor-oil or of aloes, combined if necessary with some narcotic, ought to be given as soon as the woman has recovered from the shock of labour, and the appearance of the evacuations should be particularly examined.

Secondly, If any indurated fæces be expelled, evincing that there had been an accumulation in the great guts, the same medicine should be continued every eight, or ten, or twelve hours (assisted, if necessary, by preparations of senna), till it be clearly ascertained that the bowels are completely unloaded.

Thurdly, After the alimentary canal has been thus cleared, it is only requisite to secure a daily evacuation, if the woman suckle her infant, unless the reduction of the uterus to its natural size in the unimpregnated state, proceed tardily. In that case (viz. where the reduction of the uterus is tardy) some medicine calculated to produce, in the course of its operation, four or five copious evacuations, of such a nature as to denote an increased secretion from the surface of the intestines ought to be prescribed every second, or third, or fourth day, according to circumstances. Combinations of rhubarb, with the compound powder of jalap, and the compound tincture of senna, are in general the appropriate medicines for such cases. But in some individuals, other combinations of purgative medicines are required.

Fourthly, If the woman be not to suckle her infant, she ought to have, every second or third day, according to her strength, till the secretion of milk cease, and the tension of the

mammæ subside, a dose of some purgative calculated to produce several loose chylous evacuations, and for this purpose, combinations of rhubarb, or senna, or colocynth, or scammony, with neutral salts, or other aperients adapted to the individual case, are to be prescribed.

Covering the surface of each mamma with some gently stimulant liniment (in those cases where the milk is to be discouraged), not only relieves the unpleasant feeling of tension, but also promotes the absorption of the milk. The preparation recommended by the author is, one ounce of unbleached bees-wax, two ounces and an half of fine olive oil, and two drachms of pure honey melted together.

That much variety of opinion has prevailed amongst authors of the first respectability, in regard to the time at which the infant ought to be applied to the breast, in cases where the mother undertakes the natural duty of suckling her infant, is not wonderful, because there is no general rule applicable to every indivi-

dual case. Indeed, there is no point perhaps upon which practitioners have so much differed.

An explanation of the various circumstances attending the secretion of milk, is the only guide by which this important matter can be regulated, and according to the author's opinion, this has never yet been sufficiently detailed.

There is ordinarily during the latter months of pregnancy a certain state of the mammæ indicating the incipient formation of milk, but in a first pregnancy, the lactiferous ducts are apt to be impervious, and hence no discharge issues from the nipples. In subsequent pregnancies, however, especially if the woman have suckled her first infant, exudation from the nipples daily takes place for a week or two, or more, previous to delivery.

On theoretical principles, therefore, it might be concluded, that in the former of those cases, the infant ought to be applied as early as possible after its birth, in order to prevent an en-

gorgement, while in the latter case, the spontaneous discharge from the nipples, must relieve the breasts, and prevent any unpleasant tension. Accordingly, experienced nurse tenders in Britain are generally directed by this rule. They consider that, if the nipples have not been free, as they call it, before delivery, the infant cannot be applied too soon, whereas if the nipples be open, it is unnecessary to apply the infant sooner than may be consistent with the feelings of the patient.

Plausible as this reasoning may appear, it is most fallacious, that is to say, in actual practice it is found to be most injurious. The sympathy between the *mammæ* and the uterus has been totally overlooked, and yet it is perhaps more obvious in the puerperal than in any other state of the system. Indeed, every old nurse well knows that whenever the infant is applied to the breast for the first three or four days after delivery, an increased discharge from the uterus, or an aggravation of after pains happens, according as the patient is

lying-in for the first time, or has had a family.

This effect of suction of the mammæ is most prejudicial in all cases of relaxation of the uterus, and in all cases where increased susceptibility of impression has preceded or followed delivery. Alarming floodings or distressing nervous affections are apt in such cases to follow the too early application of the infant.

Many respectable authors, who entertain a contrary opinion, have urged that the infant may suffer if it be not permitted to suck its mother soon after birth. Monsr. Gardien, for example, alleges,* that “the milk first secreted called colostrum, is well calculated to cleanse the bowels of the infant;” and others, with more probability perhaps, allege that the instinct of sucking is lost if not indulged within a few hours after birth. But there are many mild laxatives which may be given with safety

* Vol. iii., p. 461.

to the infant, and the instinct of sucking may be readily preserved by means of the sucking bottle.

No invariable rule, it must be obvious from the above considerations, can be adopted in regard to the time at which the infant may be permitted to suck its mother. This matter must be regulated entirely by the discernment of the practitioner.

With respect to the time at which the woman should be taken out of bed, and particularly should be permitted to make the exertion of sitting up, or standing, or walking, that must be regulated entirely by the state of the uterus and of the lochial discharge, as well as of the general strength of the individual.

So long as the uterus continues bulky, in other words, so long as the enlarged uterus can be felt by applying the hand to the lower part of the abdomen, any attempt at the erect posture would not only be productive of painful

bearing down, but would also tend, by the mechanical pressure, to interrupt the process of absorption of the uterine system. Many of the deplorable cases which occur among the lower ranks, in consequence of their imprudent exertions soon after delivery, and which must be familiar to every practitioner who has visited individuals of that description, furnish a strong illustration of the importance of attending to this precept.

During the flow of the red lochia, it is quite evident that any exertion in the erect posture might excite an injurious or even an overwhelming discharge. Several cases have fallen under the author's observation, where excessive hæmorrhagy has been excited at the distance of even ten or twelve days after delivery, by a sudden jump out of bed, in consequence of agitation of the mind.

But besides, even after the chance of hæmorrhagy from the change in the condition of the lochia may be considered to have passed

away, the exertion of standing or walking may, as already stated, stop the progress of absorption of the uterine system, and may, in consequence, be productive of acute or of chronic affections of all the parts contained within the pelvis, and even, by sympathy, of the lower extremities.

It may therefore be laid down as a general rule, that no woman should be allowed to sit up, or to stand, or to walk, so long as the uterus is bulky, or so long as the lochia continue to flow. A great diversity in these respects will be found to prevail in different individuals, in so much, that in some, any exertion may be permitted at the end of a week after delivery, while in others the same liberties cannot be allowed for a month or even longer.

ON LABORIOUS LABOURS.

By this term, British practitioners commonly understand cases where, although the head of the infant be forced foremost, more than usual pain and difficulty are encountered. But as it is not easy to estimate in any given case, those degrees of pain and difficulty which constitute a deviation from the usual sufferings, it has been agreed to adopt the duration of the process as the mark of distinction, and hence in all cases where (the head of the infant being the advancing part) the labour is protracted beyond twenty-four hours, the case is termed difficult or laborious.*

* Denman, vol. ii., page 2.—“ This definition, which is chiefly taken from time, is liable to some objections, as there may be more pain endured, and greater difficulty surmounted by one woman in six hours, than by another in twenty-four; but on the whole, it will be found to apply to practice in an advantageous, and often in an unexceptionable manner. It will, in particular, afford a remedy for impati-

Before the importance of limiting the duration of the first stage of labour to twelve or fourteen hours was understood, this conventional definition of laborious labour was not only proper but necessary, as furnishing a salutary check to the importunities of the patient or attendants, and to the impatience of the practitioner, and perhaps till the proper management of the first stage, as recommended by the author, (Part i.), be universally adopted, this definition ought to be retained.

But in making this concession, the author feels it incumbent upon him to declare, that when the uterine contractions proceed regularly without decided interruption, or when the infant, after the rupture of the membranes remains in close contact with the passages, the sufferings of the woman should almost never be allowed to continue longer than twenty-four

ence, and guard the practitioner, in some measure, from premature attempts to give assistance, without incurring the danger of those evils which might be apprehended from too long delay."

hours, reckoning from the beginning of true labour throes.

He is aware that this doctrine is much at variance with that of many of the most respectable of his professional brethren, and therefore it is incumbent upon him to explain the reasons which have led him to adopt it.

In the *first* place, he assumes that he has already proved both the utility and the practicability of limiting the duration of the first stage of labour to twelve hours.

Secondly, Experience has convinced him, that an attentive practitioner can have no difficulty of ascertaining, within the remaining twelve hours, whether the natural powers be adequate to the safe accomplishment of the delivery, and of deciding upon the appropriate treatment to be adopted.

The records of public hospitals shew, that cases occasionally occur where, after the com-

pletion of the first stage of labour, the uterine contractions become suspended or ineffective for hours, and yet the patient is eventually delivered with safety after a protracted suffering of perhaps two days or more. But his conviction is, that in all such cases there had been no injurious pressure on the parts in contact with the infant.

Taking the term laborious labour in its usual acceptation, such cases must terminate in one of three ways, for the natural powers may at last safely expel the infant, or, while they fail to do so, the practitioner may be able, by artificial means, to relieve the woman, and to preserve the infant, or it may be impossible to extract the infant alive through the natural passages. These three different terminations have suggested a subdivision of laborious labours into three orders, an arrangement which tends much to elucidate the appropriate practice.

When labour (with the head of the infant advancing) is protracted beyond twenty-four

hours, the sufferings of the woman are always more or less distressing. Increased action of the heart and arteries, with febrile heat and thirst, headache, restlessness, and despondency first take place. By and by, the strength fails,—the belly is first pained on pressure, and then swelled—the passages become tender to the touch—the features shrink—the breathing is affected—vomiting is apt to occur, followed by delirium, or convulsions, or death. In cases where the labour throes are violent, and the resistance is great, the poor woman's sufferings are liable to be suddenly aggravated by the rupture of the uterus.

That this is a real representation of the consequences of protracted labour must be acknowledged by every practitioner who has devoted himself to the department of midwifery, and is most strikingly illustrated by Dr Collins's valuable record of the cases which had occurred in the Dublin Lying-in Hospital during his mastership. The first duty in all such cases, therefore, is to ascertain how long it

may be safe to trust to the natural powers, or, in other words, to decide whether the case should be classed under the first, or second, or third order of laborious labours.

For this purpose, the previous history of the patient—the duration of labour—the situation of the infant's head—the apparent effect of the labour throes—the condition of the passages, and the state of the general system of the woman must be severally taken into deliberate consideration.

Firstly, The previous history should relate both to the age and to the state of health of the individual. It must be obvious, that young and healthy women can bear with impunity, a protraction of labour which would prove injurious to elderly or delicate women.

Secondly, The duration of labour is the great mark by which it is usual for the patient and attendants to consider that artificial interference is required. But this is a most fallacious

test for several reasons. As spurious pains not unfrequently precede real ones, even in a first pregnancy, and are common occurrences in women who have had a family, it may be supposed that the patient has been three or four days in labour, when perhaps she has not been as many hours. Besides, some individuals suffer little from a considerable protraction of labour, as the records of the great lying-in hospitals upon the Continent and in Dublin amply testify. The duration of labour, therefore, is only to be considered as a collateral circumstance.

Thirdly, The situation of the infant's head in respect both to position, and to its advance through the pelvis, must be very carefully ascertained. If the vertex be the presenting part, and the parietal protuberances have cleared the brim of the pelvis, no serious impediment, generally speaking, need be apprehended; but if any other part than the vertex present, and if the bulky part of the head remain above the brim of the pelvis for a

considerable time, disproportion may be dreaded.

Fourthly, The apparent effects of the labour throes require very particular attention. So long as they are perceived to act decidedly in pushing forward the presenting part, however slowly, the natural powers may be trusted, if other circumstances are favourable. But if they exert no influence upon the presenting part, for a time varying from half an hour to six or seven hours, according to the other symptoms of the case, it may be concluded that the infant is wedged in the passage, and that the contractions of the uterus are inadequate to expel it with safety. The means of ascertaining this important fact are to be stated in a subsequent section.

Fifthly, The condition of the passages furnishes a most important guide in deciding upon the nature of laborious labours.

When the author studied, he was taught to

believe that the only obstacles to the progress of the infant from the state of the passages were, original malformation, or deformity, or exostoses of the bones of the pelvis, or diseases of the soft parts ; but he was only a short time in practice before he discovered a cause of obstruction which is much more frequent, under ordinary management than the other causes, viz., swelling of the parts lining the pelvis.

This swelling happens under two different combinations of circumstances, viz., where, after the rupture of the membranes, the head of the infant remains for a considerable time pressing strongly on the brim ; and, *secondly*, where it becomes firmly wedged within the cavity of the pelvis.

In the former of those cases, the cervix uteri, as well as the linings of the pelvis, are swelled. In the latter cases the swelling is apparently confined to the parts within the pelvis, in contact with the infant's head. Both those cases may

be recognised by the morbid heat and extreme tenderness of the parts alluded to.*

Lastly, Most particular attention must be paid to the state of the general system of the patient. The appearance of the countenance, and the action of the heart and lungs, and the ordinary indications marking the strength of the individual must be very minutely examined. No regard is to be paid to the alleged feelings of sinking of the woman, for these are often ideal, though they certainly excite the alarm of the attendants. While there is neither headache nor restlessness, and while the action of the heart and lungs continues regular, no expression of exhaustion on the part of the patient should impose on the practitioner.

* When he mentioned this discovery to his father, the late Dr Alexander Hamilton, Professor of Midwifery in the University of Edinburgh, he found that his father had anticipated him in the discovery, but that he had been unwilling to divulge it, till he had had farther experience on the subject. It was communicated to the public in 1792, in his Father's Letters to Dr Osborne, page 82, &c.

On the whole, it may be concluded, that so long as there are no untoward symptoms in respect to the general health—so long as the pains continue to advance the infant—and so long as the passages remain in their healthy natural state, the contractions of the uterus may be expected to complete the delivery. But whenever symptoms of derangement of the general health, or evidences of the uterine contraction ceasing to advance the infant, or of there being an impediment to its advance in consequence of some state of the passages, become apparent—and, more especially, whenever circumstances denoting injurious pressure or interrupted circulation in the important parts concerned in parturition occur, the natural efforts can no longer be trusted to.

The causes of all laborious labours are quite obvious, for all circumstances which can lessen the force of the uterine contractions, or which can increase the natural obstacles to the birth of the infant, must render the process more or less painful and difficult.

In the first and second orders of laborious labour, the infant and the apertures must necessarily be of such proportions that the one can be safely forced through the other ; but in the third order, the infant is either too large to pass through the natural passages, or those passages are too narrow to admit of the birth of an infant of the usual bulk.

A review of the causes which, in the two first orders, lessen the force of the uterine contractions, or increase the ordinary resistances, must satisfy every unprejudiced person, that, with very few exceptions, they arise from inattention or mismanagement. Thus, the causes of diminished uterine contractions commonly enumerated are, general debility, debility of the uterus, passions of the mind, and irregular distribution of the blood.

Firstly, It is a curious fact, which merits very particular notice, that no natural cause debilitating the living powers, lessens the uterine contractions. In women in the last stage

of phthisis pulmonalis, or of dropsy, as well as in those who are moribund from continued fever, or scarlatina, or pneumonia, or other acute diseases, there are usually strong uterine contractions when labour comes on. Perhaps the fact is so well known to the profession, that it is scarcely necessary to adduce any proofs from the experience of the author. It may, however, be useful to record one remarkable illustration.

Soon after marriage, a lady became dropsical, and, at the same time, had symptoms of pregnancy. The dropsical symptoms were allowed to proceed, on the avowed declaration of the medical attendants, that in consequence of pregnancy, active measures could not be adopted.

This patient, when the author was consulted, was found to have the abdomen distended to such a degree, together with such odema of the whole superficial cellular membrane, that she had been forced to be propped up in an

easy chair during night and day for above three weeks, the slightest attempt at the reclining posture occasioning the feeling of threatening suffocation. It was supposed that she had not attained the completion of seven calendar months of pregnancy.

Under the very urgent circumstances of the case, the only resource was, the immediate induction of labour, which the author undertook entirely from a sense of duty, having the impression that she might probably expire in the act, for, as her posture could not be altered, there was the danger of fatal syncope supervening to delivery.

Nearly two wash hand basons full of liquor amnii were discharged on puncturing the membranes of the ovum, notwithstanding which, the patient could not yet bear any degree of change of posture. Strong uterine contractions soon took place, and the delivery was completed within less than two hours. The placenta was separated without difficulty, and its expulsion

was followed by that of several firm coagula of blood.*

Without multiplying examples, the author feels warranted in believing, that when the force of the uterine contractions is impaired by general debility, it is always to be imputed to some mismanagement. In the lower ranks, undue excitement and impure air most frequently occasion this debility, and in the better ranks, the same effect is produced by the protraction of the first stage of labour, or by artificially increasing the action of the uterus by marching the patient through one or more apartments, or by using other endeavours to quicken the pains, as it is technically called.

Secondly, The most ordinary circumstances

* This patient only survived three days, but it was the conviction of the author at the time, that if active measures had been pursued when the dropsical symptoms first occurred, or even if artificial delivery had been induced a month sooner, the patient's life might have been saved. Many years have elapsed since that case, and the author's additional experience has confirmed his original impression.

which debilitate the uterus itself are, the premature rupture of the membranes, and the protraction of the first stage.

It is a well known fact, that after the rupture of the membranes, the labour throes become much more powerful, but if the os uteri do not yield in a short time, this increased action necessarily tends to debilitate the uterine fibres, upon the same principle, that if a person unaccustomed to wield a blacksmith's hammer were to begin to beat upon the anvil with great force and great rapidity, his arm would soon become tired.

Occasionally, indeed, the premature rupture of the membranes is spontaneous, occurring before the practitioner is called. But in such a case, it is possible so to co-operate with the strong pains as to secure the dilatation of the uterus, before its muscular energy be impaired.

His observations on the injurious effects of

the protraction of the first stage of labour, have been fully explained by the author in the first part of this work.

Thirdly, That inexperienced practitioners should be inclined to doubt that affections of the mind, such as fear, or overwhelming grief, may influence the labour throes, is not wonderful, because it is an established fact, that the muscular action of the uterus is not obedient to the will, but that individuals who have been actually engaged in practice should entertain such an opinion, seems to be very inexplicable.

Professor Davis says (page 972), “ It has been asserted that labour has often been rendered tedious by certain passions of the mind. That protracted labours may have sometimes been accompanied by unhappy states of mind there can be no doubt, but the author is not sure that he has ever met with a genuine example of a case of parturition rendered tedious and protracted by this cause alone. He considers, therefore, the dogma as in a great

measure unfounded, and its general prevalence as the result of repeated but inconsiderate assertion."

Presuming that Professor Davis reports the doctrines and practice generally adopted by the respectable practitioners of midwifery in London, the author holds it incumbent on him to notice very particularly these observations.

That fear is apt to diminish or suspend uterine contractions must be familiar to every man engaged in extensive practice. During the first stage of labour, it frequently happens that pains, which had been recurring every four or five minutes, suddenly cease on the arrival of the practitioner; and the remark made by the patient and the nurse is, that the doctor has frightened away the pains. By prudent management the agitation of the patient subsides, and the pains recur. That this is a common occurrence every lady who has had a family can testify.

On the contrary, if the practitioner do not soothe the feelings of his patient, the action of the uterus may be suspended for hours. Of this the author could offer hundreds of illustrations, but one may suffice :—A lady in her fourth pregnancy repaired to a certain capital, for the benefit of the professional attendance of an eminent practitioner, now deceased. After labour pains had become quite regular and strong, this gentleman was sent for about one o'clock of the morning ; and the first remark he made to his patient was, that he had gone to bed greatly fatigued, and that if he had been sent for unnecessarily he should be very much provoked. No labour throe followed this speech till seven of the morning.

But it is not in the first stage alone that fear and other affections of the mind have the influence of lessening or stopping uterine contractions. Many cases, almost every year of his professional life, have fallen under the notice of the author, where the pains had ceased

from this cause, even when the infant was pressing on the perinæum.

Upon one occasion the author believes that the knowledge of this fact enabled him to save a patient under circumstances of great danger. It was the lady's first child, and the labour commenced with the two untoward circumstances of the premature rupture of the membranes and the presentation of the breech. When the infant was so far advanced as to begin to press on the perinæum, the author directed the nurse to put the patient in the proper posture, as he meant, after next pain, to sit down to give assistance. Although he left the room for this purpose, he continued at the outside of the bed-room door; and on hearing a very violent bearing-down pain, he ran forward to take charge. He found the external parts enormously distended on the right side, and he at once discovered that an arterial branch within the right labium had burst, and that there was a great effusion of blood into the adjoining cellular membrane. It occurred

to him, that if the uterine contractions continued, the pressure of the infant upon the swollen parts must occasion a laceration, and he feared that it might be impossible to command the bleeding vessel, for he knew that, in similar cases, the hæmorrhagy is arrested by the pressure consequent upon the coagulation and confinement of the effused fluid.

Thus reasoning, he told the patient that she had burst a blood vessel, and that if she attempted to bear down he could not answer for the consequences. The alarm thus excited had the desired effect, for the uterine contractions from that moment ceased.*

* Twelve hours after the accident happened, the author directed a surgeon to make an incision, to the extent of two inches, upon the internal surface of the right labium, and a quantity of coagulated blood, to the amount of upwards of two pounds, was extracted by the fingers, for external pressure had no influence. The infant was thus drawn forward (alive) by means of the forceps, and the patient, after a tedious illness, so completely recovered that she afterwards had a large family.

If the author deemed it necessary to refer to published authorities in confirmation of the opinion that fear suspends uterine action, he could quote a case, detailed in the 31st volume, page 215, of the *Dictionnaire des Sciences Medicales*.*

* The patient was a poor woman, who, while in labour, was brought into a receptacle for the delivery of women, established in Paris for the benefit of his pupils, by a celebrated teacher of the last century, Mons. Solayers. The progress of the labour was so far advanced when she arrived at the hospital, and such were the regularity and force of the pains, that it was believed that her labour would be of short duration. But this poor woman was subjected to the examination of sixty students in succession, and in proportion as the examination proceeded, the pains diminished in frequency and force, and at last they entirely ceased. She continued without the slightest pain during the succeeding night, and during the two following days. On the third and fourth night, all the students, excepting nine or ten, having left her, the labour pains again began, but on the return of the students, who were then sent for, they again ceased. Mons. Solayers then desired the students to hide themselves, making arrangements to call them when necessary. As soon as she was rid of her visitors, brisk pains came on, and the head of the infant advanced rapidly. At this period the students were brought back, and their unexpected arrival again for some time suspended the pains, but at last the delivery was completed,—the poor woman declaring, that if she had known that the students were

No man, therefore, can practise midwifery with safety to his patients or comfort to himself, according to the sincere belief of the author, who does not use his utmost endeavours to soothe the feelings and encourage the hopes of the suffering woman, whatever may be her rank in life, and he holds it to be a doctrine replete with great danger, that passions of the mind do not interrupt the progress of labour.

Fourthly, Irregular distribution of the blood must obviously tend both to diminish the muscular powers of the uterus, and to lay the foundation for serious injury in some of the important viscera. But when this circumstance takes place during labour, it is almost invariably the fault of the practitioner, for there are decided marks denoting the approach of this irregularity of the vascular action, which should lead to the adoption of the appropriate means of preventing it.

so near at hand, she should not have been delivered for eight days to come.

From the preceding observations, the fair inference is, that where the labour throes are ineffective from any of the above causes (and combinations of those causes are occasionally met with), the circumstance should be attributed to mismanagement.

As to the causes which increase the ordinary resistances to the progress of the infant in the two first orders of laborious labours, it will appear, on investigation, that they too arise from some fault of the attending practitioner. They are—great relaxation of the parietes of the abdomen—rigidity of the membranes of the ovum—unfavourable position of the infant's head, and rigidity of the external parts.

Firstly, After frequent child bearing, especially where the patient has not been properly treated, an extraordinary degree of relaxation of the parietes of the abdomen is apt to take place, in so much that when the woman is laid upon her side, the uterine action tends to press the infant's head against the lumbar

vertebræ, instead of accommodating it to the apertures of the pelvis, and there can be no doubt that labour has from this cause been protracted for a considerable time. This, however, can always be prevented by the very simple expedient of supporting the abdomen by a suitable bandage, and making the patient remain upon her back, with her knees drawn up, till the head of the infant has entered the pelvis, when she can be allowed to resume the usual position.

Secondly, Many respectable practitioners have alleged, that unusual rigidity of the membranes does not retard the progress of labour,* but the experience of the author, at a very early period of his life, convinced him of this

* Even Dr Burns seems to have entertained this prejudice for some years. In his second edition, published in 1811, page 337, he says,—“ Preternatural strength of the membranes has been considered as a cause of tedious labour, and we have accordingly been desired to tear them. This is, however, very seldom the case. When they remain long tense, it is oftener from spasm of the uterus, than from firmness of structure.” In his subsequent editions, he has, with his usual candour and judgment, altered this opinion.

fact, and accordingly he has been accustomed to explain to his pupils, that, if after the os uteri is completely dilated, the membranes continue entire without passing into the vagina, or if advancing into the vagina, there be a quantity of liquor amnii interposed between them and the head of the infant, (so that the head does not enter the passage) every labour thro' till the membranes give way, is to be regarded as occasioning unnecessary and superfluous suffering.

Above twenty years ago, a case occurred, which illustrates this subject very satisfactorily. The patient was a delicate person, who had not attained her seventeenth year. She had been in labour a great part of Thursday, and it was admitted, by an intelligent midwife who attended her, that the os uteri was fully dilated on Thursday night. Regular and strong pains continued from that date till the author was called on Saturday morning. On rupturing the membranes, three pains expelled the infant.*

* Dr Davis recommends an instrument for rupturing the

Thirdly, Unfavourable position of the child's head is occasionally met with, without any previous mismanagement of the practitioner, although it was alleged, during the latter part of the last century, by Dr Denman, Dr Clarke, and other eminent London teachers, that it was an ordinary consequence of the practice of prematurely rupturing the membranes, which many individuals were at that time in the habit of doing, for the purpose of hastening the delivery. But unless the infant be very large, the practitioner, by suitable counter pressure, can prevent the mal-positions alluded to from materially protracting the labour.

Fourthly, Rigidity of the external parts is not an uncommon occurrence in a first labour. If, however, the first stage be completed within twelve hours, and the directions for supporting the perinæum during the second stage, (detailed Part i., page 237), be attended to, the

membranes, but a common writing pen is the best instrument.

delivery should be accomplished within the usual time.

These observations ought to be indelibly impressed upon the mind of every member of the profession. The author's solemn conviction is, that where the woman is in good health, and where the passages are of the natural proportion, the only causes of the two first orders of laborious labours, which an attentive practitioner has to encounter, are, an unusual size of the infant, mal-position of its head, and rigidity of the orifice of the vagina.

Perhaps it may be supposed that some notice should be taken of two other causes of resistance which were formerly alleged by systematic writers, viz., shortness of the umbilical cord, and anchylosis of the coccyx.

Dr Denman (vol. ii., page 17,) has admitted the former of those causes. He says, "it may be naturally very short, or it may be rendered so accidentally by its circumvolution round the

neck, body, or limbs of the child. Whichsoever of these is the case, the inconvenience produced at the time of labour is the same, that is, the labour may be retarded," &c.

"Shortness of the funis," he further says, "is always to be suspected when the head of the child is retracted upon the declension of every pain, and it may sometimes be discovered that it is more than once twisted round the neck of the child long before it is born."

Two cases have occurred to the author where the naval-string was naturally so short, that it became necessary to tie it, and to cut it within the vagina, consequently its length could not have exceeded six inches, and he has attended many cases where the cord was three and four times convoluted round the neck of the infant, but in none of those cases was there any impediment to delivery. And the reason for this is obvious. The uterus, in expelling the infant, is in close contact with it, and consequently the advance of the infant cannot be retarded

by the shortness of the cord. The evidence which Dr Denman gives in support of his opinion, viz., the retraction of the head of the infant, when the pain ceases, is most erroneous. Under such circumstances the retraction arises chiefly from the resistance to the coccygæi muscles. They yield in a certain degree during the pain ; but when that ceases they re-act and draw back the infant.

As to tying and dividing the cord before the birth of the infant, a practice which Dr Denman seems to sanction, the author has met with no case of laborious labour requiring such interference. But in a case of preternatural labour, to which he was called within these few years, he found the progress of the infant strongly arrested after the protrusion of the breech ; and, on investigating the cause, he observed that the cord entangled the infant, so that it passed up between the buttocks, strongly compressing the perinæum and genitals. With some difficulty he got two ligatures insinuated, and then he cut between them. The delivery was

accomplished without further trouble. The portion of the cord remaining attached to the infant on birth was found to be between two and three feet in length.

Anchylosis of the coccyx, as a cause of protracted labour, is now, by the universal consent of the profession, an exploded doctrine.

Disproportion between the mother and infant, which constitutes the cause of the third order of laborious labours, is fortunately of rare occurrence, and is seldom the effect of mismanagement. Those causes are particularly enumerated in the third section, and the means by which they are to be recognised are minutely detailed.

SECTION I.—FIRST ORDER OF LABORIOUS LABOUR.

When labour is more than usually protracted, the first duty of the practitioner is to ascertain to which of the three orders the case should be referred. If the patient have been properly managed from the beginning this task is not difficult. It must be decided by a careful consideration of the state of the woman's general system,—of the position of the infant's head,—of the condition of the passages, and of the effect of the labour throes, as already explained.

After the practitioner has ascertained the safety and propriety of still trusting to the natural powers, he is to recommend such means as may counteract the cause of protraction. On the supposition that this is diminished or impaired action of the uterus, a practical question of great importance falls to be considered, viz., whether there be any drugs which have

the specific power of exciting or increasing uterine contractions. Formerly many medicines were supposed to have such an effect, but experience proved their inefficacy so decidedly, that, till lately, all confidence in such remedies was abandoned ; and in cases of ineffective pains the administration of stimulant clysters was the chief agent relied upon.

This practice has been recommended by Dr Denman. He says (vol. ii, page 9),—" In some cases in which the action of the uterus is very feeble and slow in its returns, as if it were unwilling to come on, a clyster rendered stimulating by the addition of an ounce of culinary or cathartic salt, will often rouse the dormant powers into action, and the labour will be much sooner completed."

Professor Burns (eighth edition, page 405) says,—“ When again we come to view the means which we possess of counteracting these causes, and accelerating labour, in order that we may choose the one best adapted to the

case, we find that they may be referred to the following :—*First*, diminishing resistance, or promoting relaxation, which increases contraction. Under this head may be included blood-letting, gently dilating the os uteri, rupturing the membranes, improving the position of the presentation. *Second*, Exciting the action of the uterus by stimulating its fibres, directly or by sympathy. Under this head may be included the effect of cordials prudently given, heat, gentle exercise, clysters, spontaneous vomiting. Friction has also often a good effect in exciting the action of the uterus after its mouth is dilated, or nearly so.” Again, he says, (page 407),—“ But whilst in cases where labour is only a little protracted, and the cause not very well marked, we trust entirely to this treatment, with the addition of a saline clyster, which is of much service, and ought seldom to be omitted, yet, where it is longer delayed, some other means are allowable, and may be necessary.” Dr Little has highly lauded this practice in the number of the Dublin Medical Journal for March 1836.

There can be no doubt that, when the first stage of labour is allowed to continue for above twelve hours, the force of the uterine contractions is apt to be much lessened, or to be in a great measure suspended, and that if, after the patient has been in this state for some time, a stimulant clyster be exhibited, it not unfrequently has the effect of restoring the action of the uterus.

But the author has been called in to many cases where, notwithstanding the stimulant clyster having excited temporary uterine contraction, it became necessary to apply the forceps, although the patients had formerly had a family. His impression has uniformly been, that while the excitement of the uterine action by means of irritating glysters, may in some cases expel the infant, it far more frequently exhausts the propelling powers, and renders artificial assistance necessary. He has never, where he had charge of the patient from the beginning, seen any case where he thought it useful to administer a stimulant enema.

Friction is stated in the quotation from Dr Burns, (page 405), to be a means of exciting uterine contractions. This was strongly recommended some years ago by Dr Power;* but the experience of the profession at large (as well as that of the author), has not confirmed the efficacy of this practice during the second stage of labour. In some cases, indeed, by its influence on the imagination, it may excite uterine contractions, but even in this view it is liable to the same objections as the administration of stimulant glysters.

Within these twenty years, a medicine formerly employed empirically in France, and other parts of the Continent, viz.—the *Secale Cornutum*, or spurred rye, has been much vaunted as a *partus accelerator* by the medical practitioners of America, and has lately been very extensively and in-

* Treatise on Midwifery, containing new principles which tend materially to lessen the sufferings of the patient, and shorten the duration of labour, by John Power, M.D.

discriminately had recourse to in Great Britain.

Against the use of this medicine the author has uniformly and strongly objected, upon the following grounds.

Firstly, If experience had established that the secale cornutum has the extraordinary power of exciting uterine contractions, it is little probable that its exhibition should have fallen into dissuetude for more than half a century at least. That some valuable medicines, such as groundsel, liverwort, &c., have been discarded from their practice by modern physicians, is admitted, but such remedies are still employed extensively by the common people in many districts, both in Scotland and in Ireland.

Secondly, A very fair trial was made of this medicine in the Hospice de la Maternité, at the suggestion of Mons. Chaussier, under the superintendence of Madame la Chapelle. She

premises, (page 314, vol. iii), that, "In the employment of the medicine she had not been inert. She gave it sometimes in decoction and sometimes in infusion, making the patient swallow the infused powder, and the dose varied from twenty to sixty grains of the powder."

She declares the result to be, that, "In the first thirty-two cases only two patients had a return of the suspended uterine contractions after the medicine had been exhibited," and that "in fourteen or fifteen other cases in which the medicine was given in the form of attenuated powder previously infused in boiling water for ten minutes to the extent of even sixty grains, no increased uterine action was excited, and it generally became necessary to apply the forceps, though, in a few cases, the labour terminated naturally though tardily, and never under four hours after taking the medicine." Her verdict upon this trial, (page 52, vol. i), is most decided. She says that "the medicine has by no means realized the high expectations held out by its favourers, and that its

chief virtue consists in its producing no bad effect."

Of the great difficulty of ascertaining the effects of medicines, the author has been always fully aware, but in the present instance, the result of Madame la Chapelle's experiments seems very conclusive. This may be perhaps illustrated to those who are sceptical upon this point, by a very obvious argument. Supposing that in forty-eight or forty-nine individuals an ordinary dose of ipecacuan had been exhibited, could it have been expected that vomiting should be excited in no more than two of the number.

Thirdly, The experience of other practitioners has shewn, that in many cases, the ergot of rye has no effect. Dr Little of Belfast, states,* that he had exhibited that medicine in fifty cases, and that it produced decided

* Dublin Journal of Medical and Chemical Science, vol. ix., page 24.

effects in thirty-four. But he has in the same essay made the following very singular admission. “For instance, the ergot of rye, which is now very generally esteemed a specific, is not by any means possessed of the same advantages, I care not how it is administered, as a solution of common salt, or hippo, either alone or combined together in the form of enema. I have succeeded in rousing the action of the womb in cases of tedious labour, with common salt, when used in the manner I stated in a foregoing part of this paper, in a far greater proportion of cases, than with ergot of rye, which has acquired such celebrity.”

Fourthly, Such is the influence of imagination upon labour pains, that it must be extremely difficult in any case to determine whether uterine action which had been suspended, and which had returned after the exhibition of a medicine, be the effect of the confidence of the patient in its powers, or of the direct influence of the medicine upon the constitution. On this subject, the author refers with great plea-

sure, to an article inserted in the 29th volume of the Edinburgh Medical and Surgical Journal, page 322, by his friend Dr Renton.

Fifthly, He can truly affirm, that since the indiscriminate use of the ergot of rye, he has been called in to cases requiring the use of the forceps, in consequence of suspended uterine action, of which he had never before seen any instances. For example, he had to employ the forceps in one case where it was the patient's tenth child, and in another case, where it was her twelfth, and in neither case was there the least degree of impaction.

Sixthly, It may appear extraordinary, that the author has only had two opportunities in practice of making a fair trial of this medicine. In both cases, it had not the slightest effect. The drug which he used had been kindly furnished to him by Dr Davis of Conduit Street, London.

Perhaps it may be necessary and useful to

explain the reasons which have prevented the author from having had more opportunities of witnessing, in his own practice, the effects of this medicine.

Firstly, He has very seldom indeed met with any case of labour where he had the charge of the patient from the beginning, where uterine contractions became feeble during the progress of the infant through the pelvis, and in the very few cases of that description which have occurred, he ascertained that the suspension of the labour pains was occasioned by the patient dreading the agony of the last two or three bearing pains. In order to counteract this impression, he felt it his duty to prescribe a medicine, which he assured the patient would immediately bring back the pains, and hitherto he has invariably succeeded. Although he has used various medicines with this view, such as camphor, ammonia, æther, &c., the pains have generally come on within less than five minutes after the first dose, in many cases within two minutes.

Secondly, In every case of protracted labour, with the exception of the two cases already alluded to, under the charge of other practitioners, to which he has been called since the ergot of rye has become in general use, he has found it necessary to advise immediate delivery, in consequence of the urgency of the symptoms.

His conviction therefore is, that the ergot of rye given in the doses hitherto recommended, can act in no other way than by influencing the imagination, and that it possesses no superiority in this respect over any other medicine. That it has injurious effects upon the infant, as has been so strongly stated by his friend, the late Dr Hosack of New York,* he is disposed to doubt, believing that the instances recorded by Dr Hosack were accidental coincidences, for the evidence of the harmlessness of this medicine when given in moderate doses, is satisfactorily established.

* *Vide* Dr Hosack's Essays on various subjects of Medical Science, vol. ii., page 295.

After the preceding observations had been written, the author made an accidental discovery, which, in his humble opinion, unequivocally proves, that the ergot of rye possesses no active medicinal powers.

On the 11th of May (1836), in his progress to the south of France, on a little excursion for change of air, in consequence of a slight indisposition, he observed in a mountainous district between Auxerre and Chalons, some labourers (who were repairing the roads) at breakfast, and he was particularly struck with the appearance of the bread they were eating. It was literally as black as if the flour, of which it had been made, had been mixed with charcoal.

He took the first opportunity of inquiring into the cause of this remarkable appearance of the bread, and he learned from a most intelligent innkeeper at Chalons, the following particulars. “ The bread eaten by the whole peasantry of a very extensive district, is made of rye. As they do not think it necessary to

separate the diseased portions of the grain, called ergot de siegle, but send the whole crop to the mill, the colour of the flour is necessarily black. The proportion of the ergot varies in different seasons, but it has never been supposed in that country, that its admixture with the sound rye produces any influence whatever upon the health of the inhabitants."

This information recalled to the author's recollection, that the fact of the ergot being mixed with rye bread had been alluded to by more than one American practitioner, and that the still more important fact, that such admixture did not produce disease, had been also conceded.* But as rye forms no portion of

* Dr William Tully of Middletown, Connecticut, in an essay inserted in the second volume of the American Journal of Science and Arts, No. 1, April 1820, pages 50 to 53, has the following remarks :—" With respect to the poisonous qualities of the clavus, and its power of producing malignant and epidemic diseases, there seems to be no foundation for such opinions. The quantity taken with bread must of necessity be so small, it must be diffused in such a quantity of flour, and so changed by the panary fermentation, as to become completely inert."

the food of the inhabitants of Scotland, he was not aware of the inferences to be deducted from those admissions.

Is it then, it may be asked, reasonable to suppose that a vegetable substance eaten daily with perfect impunity by the inhabitants of an extensive district, could be possessed of active medicinal virtues? Yet Dr Maunsell* says, that “extraordinary doses of this drug occasionally produce dangerous effects upon the nervous system, and probably other mischief, and at the same time are less likely to act upon the uterus than smaller quantities.” In illustration, he states two cases which occurred to himself,—one case to Dr Johnston, and two cases to Dr Cusack, where symptoms of head affections supervened to the use of the ergot, without any

“Besides, it must have been eaten from time immemorial, as well since as before the occurrence of the diseases that have been attributed to it, whilst their appearance has been so rare as to cause them to be looked upon as phenomena.”

* Dublin Journal of Medical and Chemical Science, vol. v., page 376.

increased action of the uterus. But there must have been some other cause for the symptoms.

Having had no opportunity of analyzing the ergoted bread in question, perhaps it might be deemed incorrect to offer any calculation of the proportion which the ergot bears to the sound rye. But the author's impression certainly was, that it must have required at least one drachm of the ergot to every pound of the healthy seed to produce the black colour of the bread. Those who know the quantity of bread consumed by the natives of France will at once see that the adult peasantry of the district in question must be accustomed to eat daily, and with perfect impunity, from one to two drachms of the ergot of rye. As to the effect of the panary fermentation alluded to by Dr Tully, it is unnecessary to offer any remarks. The biscuits furnished to the Danish sailors are made from rye, and are as black as the rye bread alluded to.

When, therefore, the progress of the labour

is retarded by diminished uterine contraction, the means to be adopted must be accommodated to the cause of the diminished action. If there be general debility, or debility of the uterus, a few hours rest must be secured, while the strength of the patient is to be supported. Due ventilation, perfect quiet, with change of posture ; mild nourishment ; cordials adapted to the habits and constitution of the individual, and opiates, are the means to be depended upon.

Opiates, however, must never be rashly advised. Dr Denman long ago warned the profession against this practice (vol. ii., page 12.) The safety and the utility of opiates must be very carefully considered before being prescribed. If there be pain in the head, or any circumstance whatever which might render the further protraction of labour for ten or twelve hours injurious, opiates are most dangerous. The only utility of opiates in cases of protracted labour is, to suspend inefficient uterine contractions which wear out the strength of the

patient without advancing the delivery, or to render those contractions more powerful, and there are no marks by which the one or the other result can be calculated upon.

Where opiates disagree from peculiarity of constitution, preparations of camphor or valerian may be substituted with advantage.

Diminished uterine contractions, arising from affections of the mind, require the appropriate means for inspiring hope and confidence. On this principle it sometimes does become necessary to prescribe medicines professedly to quicken the pains.

Irregular distribution of the blood, when it is ascertained to be the cause of protraction, is to be relieved by venesection. There is less risk of erring in the use of the lancet than in the exhibition of opiates, for there are few cases of protracted labour where bleeding can be injurious. While it relieves the general circulating system, it must tend both to prevent the

injurious effects of pressure upon the contents of the pelvis, and also to promote the dilatation of the passages. This practice has been inculcated by the author for at least forty-five years, and he has been not a little surprised to find in some late publications, the credit of it ascribed to Dr Dewees of Philadelphia.

If, on the other hand, the protraction of labour arise from an increase of the ordinary resistances to the progress of the infant, the means to be adopted are very simple.

The treatment in cases of pendulous belly, and of rigidity of the membranes having been already explained (page 65), requires no further notice.

As to the two other causes, unfavourable position of the infant's head is to be remedied by counter pressure, and this must be applied according to the circumstances of the individual case. Thus, where the face of the infant has a tendency to turn towards the pubes, the prac-

tice recommended, (Part i., page 236,) is to be followed. When the brow is the presenting part, the object should be by counter pressure, to reduce it to a presentation of the anterior fontanelle, and where the face is forced foremost, the chin is, if possible, to be directed towards the nearer sacro iliac synchondrosis, till it be brought in contact with the coccygæi muscles, when it is to be gradually turned into the arch of the pubes.*

Rigidity of the external parts may in some cases require blood letting, but in general, if the directions for the management of this part of the labour, detailed (page 257 of Part i.), be attended to, any ordinary rigidity will be naturally overcome.

* For about twenty years, the author has had no occasion to use any other means for the management of face cases.

SECTION II.—SECOND ORDER OF LABORIOUS LABOUR.

THIS order comprehends all cases where the labour pains become so inefficacious that the infant is no longer pressed forward, while, at the same time, there are unequivocal evidences that there is no actual disproportion between the mother and infant. In those cases it is necessary to have recourse to some mechanical means for completing the delivery, and the author has been led to prefer the forceps for this purpose. During many years he employed the common short forceps, with a double curvature, the form of which he described in the eighth volume of the Second Decade of Dr Denman's Medical Commentaries published in 1794, (page 405.)*

* "The length of the instrument is 11 inches; that of each handle $4\frac{1}{2}$ inches. If a straight line be drawn through the centre of the plane surface of one handle, and be produced to the extremity of the instrument (which forms the axis of the handles when both are joined), the convex edge of the blade, at the greatest distance from this line, is dis-

Latterly, however, he has preferred an instrument a little longer than that recommended by the late Dr Osborne, though precisely of the same form. The whole length of the instrument is $13\frac{3}{8}$ inches. That of each blade, from the upper end of the lock, is $7\frac{5}{8}$ inches, leaving $5\frac{1}{2}$ inches for the length of the handles. When both branches of the instrument are joined, the greatest distance between the blades is $2\frac{5}{8}$ inches. With this instrument an infant of the ordinary size can be safely drawn through an oval aperture, the long diameter of which is four inches, and the short three and a quarter, or even a fraction less, according to the compressibility of the head.*

tant $1\frac{3}{8}$ inches, and the extreme distance of the point on the opposite edge is $\frac{1}{16}$ ths of an inch. When both blades are joined, their greatest width is $2\frac{3}{4}$ inches. The right hand blade has a hinge between the handle and blade, by which it is easily introduced while the patient lies on the left side."

* Upon one occasion, the author gave a public demonstration in his class-room, of the superiority of this instrument to that invented by Dr Davis, by the application of the two instruments upon the head of a living infant.

This instrument is very different from that apparently employed in the Dublin Lying-in Hospital. Dr Collins says (page 12), “ When we consider that the blades of the smallest sized forceps used in Britain, even when completely closed, measure from $3\frac{1}{8}$ inches to $3\frac{1}{2}$ it is clear that were the bones of the pelvis denuded of their soft parts, there would not be space to admit of their application.” These observations account for certain opinions in respect to the utility of that instrument, which Dr Collins seems to entertain.

Cases requiring the use of the forceps occur so seldom where the first stage of labour is properly conducted, that, in the course of forty-eight years practice, the author has only had occasion to employ that instrument thirty-three times where he had had the charge of the patient from the beginning, and these were cases where, after the labour had continued for a certain time, the contractions of the uterus had ceased to have any influence in advancing the infant, either from unusual size, or malposition

of the head, while there could be no doubt respecting the safety of the operation.

There is too much reason to believe, that British practitioners, from their unwillingness to give pain, or to hurt the feelings of their patients, are apt to procrastinate, and to lose the favourable time for safe and effectual interference. No intelligent practitioner would wait in cases where the labour throes cease to have any influence in advancing the delivery, if the head of the infant be within reach of the forceps, till there be "heat or tenderness of the passages," and still less till "the patients strength be much exhausted."

It is impossible to imagine a more erroneous description of the condition into which a woman in labour should be allowed to fall before having recourse to the use of the forceps, than that given by Dr Osborne, (page 69.) Indeed the great utility of this mechanical contrivance is, that it enables the practitioner to prevent the occurrence of those untoward symptoms which

the doctor has described as alone warranting the use of the instrument. Waiting “till the powers of nature are absolutely and altogether exhausted,” is a most dangerous doctrine. In page 57, Dr Osborne even hints at waiting for the third or fourth day before interfering.

The obvious duty of the practitioner in every case, must be to ascertain what the natural efforts can accomplish, and when he is satisfied that the delivery cannot be permitted to go on without some injury to the mother or to the infant, he is no longer to delay assistance. Keeping this principle in view, the time allowed for the efforts of nature must be regulated by the symptoms of the individual case.

For the illustration of this practical doctrine, the author may briefly state the particulars of two cases which he attended within these few years. In the one case the patient, who had exceeded the fortieth year of her life, became in labour of her first child at about eight of the evening. Ten hours elapsed without much pro-

gress, notwithstanding regular pains. Venæsection was then had recourse to, and by eight in the morning the os uteri was fully dilated, the membranes had burst, and the head of the infant in the natural position, had advanced so far into the cavity of the pelvis as to be in contact with the coccygæi muscles. Two hours now elapsed under strong pains, recurring every three minutes without any further progress. A finger applied to the presenting part during a pain, was not in the slightest degree pressed upon. The infant was then drawn forward by the forceps, with perfect safety both to it and to the mother.

In the other case the patient had not attained her thirtieth year, and it was her first labour. She began to be ill at eleven o'clock at night, and by seven of the morning the infant's head filled the cavity of the pelvis. There it remained immoveably fixed, notwithstanding regular and strong pains, till two in the afternoon, when the forceps was applied, and the delivery was accomplished easily and successfully.

This difference of practice can be readily explained. In the former of those cases, the first stage of labour had lasted nearly twelve hours, and the patient was well advanced in life ; it was therefore judged prudent to give assistance, on finding that the infant had been wedged for two hours within the passage. In the second case, on the other hand, the first stage of labour had lasted only eight hours, and the patient was a young and healthy individual, and consequently it was a duty to delay interference, till there should be a moral certainty that the labour throes could not safely accommodate the infant to the passage.

These two cases are selected, for the purpose of marking the two extremes of time, during which it is proper to wait for the effects of the uterine contractions, where there are no untoward symptoms, and the author must express his surprise at the delay recorded in many of the cases which occurred in the Dublin Lying-in Hospital, under the very able superintendence of Dr Collins and Dr Kennedy. It

appears that from twelve to twenty-four hours were not unfrequently allowed to elapse in cases where (there being no disproportion) the labour throes ceased to advance the infant, before recourse was had to instrumental delivery.* He can scarcely permit himself to believe that the patients, instead of having been watched unremittingly from the moment that the infant's head had passed through the os uteri, had only been visited from time to time according to the practice adopted above half a century ago.

He has invariably inculcated upon the minds of his pupils the necessity for remaining steadily and uninterruptedly by the bedside of the

* *Vide* Dr Collins's work, page 300, No. 32; page 462, No. 49; page 464, No. 150; ditto, No. 173; page 465, No. 209; page 469, No. 425; page 470, No. 509; ditto, No. 526; page 471, No. 555; page 472, No. 626; ditto, 639; page 473, No. 665; page 474, No. 667; page 475, No. 674; page 476, No. 740; page 477, No. 808; ditto, No. 817; page 478, No. 820; page 480, No. 976; ditto No. 1005; ditto, 1032; page 482, No. 1041; ditto, No. 1053.

patient, anxiously marking the effect of the pains, from the time that the second stage commences till its completion, and he has scrupulously adhered to that precept in his own private practice, whatever the rank of the patient might have been. It was to enforce this rule, and to suggest means for preventing the laceration of the fourchette that he has dwelt so minutely on the management of the second stage of labour in the first part of this work. The number of cases of partial laceration of the perinæum, in which he has been consulted, is incredible. It is the most ordinary cause of prolapsus uteri in the better ranks.

If the progress of the labour be watched, as it ought to be, from the time that the os uteri is fully dilated, it seems impossible that the state of the patient in any case could be allowed to be such as that described by Dr Collin's in the following quotation, page 464.

No. 150. " Was forty-eight hours in labour in the hospital, the waters having been

discharged a considerable time before admission. For several hours after she came in, the labour pains were neither severe nor frequent ; however, the uterus afterwards acted well, and the head was forced so low as to cause the scalp nearly to protrude, when it remained stationary for twelve hours. The ear could be distinctly felt next the pubes, and there was sufficient room towards the sacrum to admit the introduction of the forceps with ease, yet in the transverse direction of the outlet there was evidently a diminution in size. It was thought, however, as the head was so low, by gentle assistance it might be got down ; no force, notwithstanding, consistent with safety, was found sufficient. As the patient's strength was rapidly sinking, and the abdomen had become tender on pressure, delivery was accomplished by lessening the head."

By attentively watching the effect of the pains from the commencement of the second stage of labour, the author, from experience, feels warranted to assert that it is always in the

practitioner's power, in cases where there is little or no disproportion, to ascertain the propriety of interference, so opportunely as to prevent the occurrence of injury, either to the mother or to the infant. It must be obvious to every practical man, that if, in the case of the Princess Charlotte, the forceps had been applied at six o'clock of Wednesday afternoon, (November 5th, 1817), when the meconium was discharged, the infant's life might have been preserved, and the mother might have had an infinitely better chance of recovery.

That melancholy case, by the by, strongly shews the fallacy of a rule which appears extremely plausible, and which has been scrupulously adopted, according to the author's interpretation of the recorded cases, in the Dublin Lying-in Hospital. The rule to which he alludes is delaying interference "as long as the head of the infant advances ever so slowly." (Dr Collins, p. 17).

But while the author declares, as his opinion

that no woman should be allowed to continue in labour, with strong and regular uterine contractions, without any advance of the head, for twelve, and far less for twenty-four hours after the complete dilatation of the os uteri, he admits that in the present state of practice, cases, with the symptoms described by Dr Collins, must occasionally occur.

His practice in such cases, however, would be entirely directed by the state of the woman, and not by that of the infant. If its "head had been for twelve hours or more, firmly compressed in the pelvis, not leaving space for the passage of a catheter,—if the urine be retained from severe pressure on the urethra,—the patient complaining of acute pain on pressure of any part of the abdomen, the pulse being at the same time hurried, and the strength failing," he should consider it his duty instantly to relieve the poor woman, without paying the least regard to the condition of the infant. Delay under such circumstances, according to

Dr Collins's own shewing, would be productive of sloughing of the contents of the pelvis, with all its fatal consequences, as he has so well described, (page 13.)

Some most respectable practitioners, as well as Dr Collins, have supposed that the use of the stethoscope furnishes a safe guide for the management of cases of protracted labours, and the author is well aware, that in controverting this doctrine he may be accused of prejudice, and yet there is no subject on which he has deliberated more anxiously, and on which he has come to a more positive decision. Considering, however, the prepossessions in favour of the stethoscope, he holds it incumbent upon him to explain at full length his reasons for this opinion.

He assumes, in the *first* place, that where the patient is under proper management from the beginning, it is in the power of the practitioner to judge whether the labour pains tend to advance the infant. Young practitioners,

indeed, may deceive themselves by the swelling of the scalp, which in some cases lengthens the head to the extent of between one and two inches.

Secondly, He considers, that after the second stage has commenced, if regular pains continue, and the infant become wedged in the passage, the practitioner is imperiously called upon, supposing the infant within reach of the forceps, to interfere before there is a probability that the pressure may destroy the infant's life, and certainly before any untoward symptom threaten the mother.

Thirdly, The forceps, if properly applied, can do no harm whatever to the mother, while, by diminishing the bulk of the infant, it enables the practitioner to lessen as well as to shorten her sufferings.

Fourthly, The principle by which he has always been directed in cases of protracted labours, to which he has been called by other

practitioners, has uniformly, been to consider the state of the mother principally, but not exclusively. Thus, if immediate delivery be required, he always ascertains whether the use of the forceps be safe, for if there be any evidence that there has been injurious pressure upon the passages, he considers it to be unwarrantable to employ that instrument. Although, therefore, the stethoscope were to shew that the infant were still alive, he should have no hesitation, under the urgent circumstances represented, to sacrifice the life of the infant to preserve the more valuable one of the parent.

Fifthly, He cannot imagine a case of laborious labour, which had been much protracted, where the knowledge of the state of the infant can be necessary to regulate the practice. If the circumstances permit the safe use of the forceps, that instrument should be employed, admitting the necessity of interference, whether the infant be dead or alive. And, on the other hand, if, from the previous mismanagement,

or other circumstances, it would be unsafe to use that instrument, it ought not to be ventured upon, even though the infant be alive.

Cases now and then occur, where, from the urgency of symptoms, speedy delivery becomes necessary, although the head be only partly within the brim of the pelvis, while the apertures seem to be of the ordinary proportions. It is justifiable, as the author has remarked in his *Select Cases of Midwifery*, page 76, to make a cautious trial of the forceps before having recourse to the perforator. In the early part of his practice, when he found that he could not succeed with the forceps in such cases, he accomplished the delivery by opening the head without withdrawing the forceps, a practice which, since that time, has been frequently had recourse to in the *Hospice de la Maternité* of Paris, under the direction of the late Madame la Chapelle.

Having very carefully considered all the

cases of laborious labours recorded by Dr Collins, the author cannot divest himself of the impression that the doctor does not sufficiently appreciate the value of the forceps. His general rule for the use of that instrument is contained in the following paragraph.

“The delivery of a female with the forceps, when the os uteri is fully dilated, the soft parts relaxed, the head resting on the perinæum, or nearly so, and the pelvis of sufficient size to permit the attendant to reach the ear with the finger, is so simple, that any individual with moderate experience may readily effect it. I have no hesitation in asserting, that to use it under other circumstances, is not only an abuse of the instrument, but most hazardous to the patient. It is from being thoroughly convinced of these facts, by long and extensive observation, that I consider the forceps quite inapplicable when the head becomes fixed in the pelvis, and that the ear cannot be reached by the finger, except by violence, in consequence of disproportion existing between the head and

pelvis, either owing to the former being unusually large, or the latter under size."

Again he says, (p. 15.) "The only means of effecting delivery, where the disproportion between the head of the child and the pelvis is so great as to prevent us reaching the ear with the finger, is by reducing the size of the head, and using the crotchet."

These observations warrant the inference, that Dr Collins is not fully aware of the power of the forceps. For, in the *first* place, when, from the protraction of the labour, the necessity for interference occurs, although the ear of the infant be within reach of the finger, that is, so near the external orifice, that an ordinary sized finger could touch it, it very seldom happens that this can be accomplished, without giving pain. If Dr Collins's rule, therefore, were adopted, the forceps could not be employed once in twenty cases, where the author from experience knows it to be both safe and useful.

Secondly, By means of well adapted forceps, the infant's head, as already stated, may be made to occupy less room, in consequence of the approximation of the parietal bones, and therefore, that instrument is particularly serviceable where the infant is wedged in the passage from the unusual size of its head.

Thirdly, That the blades of the forceps are to be applied over the parietal bones of the infant with the convex edge in such a direction, that it shall, in the course of the operation be brought along the hollow of the sacrum, is an axiom that is indisputable, but it is not necessary, for this purpose, that the ears be felt. Although, when the head has been for any time compressed, the swelling of the scalp renders it difficult to trace the sutures, the shape of the several bones of the cranium can always be recognized, and therefore the practitioner should be able readily to ascertain the exact position of the infant, and to slide up the instrument in the proper direction. During the last 30 years, where the author has had occasion to use the

forceps, he has never even endeavoured to feel the ear of the infant.

Dr Collins has recorded* cases where the application of the forceps proved unsuccessful, and the author ventures respectfully to offer the following explanation of those disappointments. *Firstly*, The instrument employed had certainly not been calculated to lessen the head of the infant, to the degree which it can bear with impunity, viz., to three inches between the parietal protuberances. And,

Secondly, Dr Collins seems not to have been aware, that in operating with the forceps, traction so directed as to accommodate the infant to the passage, renders it unnecessary to make almost any degree of lateral pressure, upon the parts of the mother in contact with the infant, which is the principal cause of danger.

Although the author has for several years

* Page 278, No. 34; page 301, No. 7; page 303, No. 10; page 464, No. 150; page 469, No. 425, &c.

used an instrument of greater length than he did for the first twenty years of his professional life, he has followed rigidly the rule which he had prescribed to himself at the commencement of his practice, viz., never to apply the instrument, till the head of the infant has cleared the uterus, and of course till it fill the pelvis, or nearly so, except under the circumstances specified in *Select Cases of Midwifery*, page 22.*

No danger can arise from the employment of

* “ Two circumstances alone render the employment of the long forceps eligible or even warrantable ; *first*, the necessity of speedy delivery, while there are no pains, and the head is beyond the reach of the short forceps, and the apertures of the pelvis are under the usual dimensions. And, *secondly*, the necessity of immediate delivery where the head is in the same situation, but where the apertures of the pelvis are natural, and the soft parts are relaxed.

“ By this practice, under the former of those circumstances, it is sometimes in the power of the practitioner to accomplish the delivery, by means perfectly consistent with the safety of the child, and consequently the long forceps should be generally tried before recourse be had to the operation of embryulcia, unless the deficiency of space in the pelvis be very considerable.”

the forceps, if the instrument be applied in proper time, and if it be used with suitable dexterity. But the author must admit, that he has been called in to several cases where inflammation of the parts lining the pelvis had followed that operation, and he cannot decide whether, in those cases, the inflammation had been the effect of mechanical injury from the instrument, or of the operation having been too long delayed.

Madame la Chapelle has given an interesting account of the result of the cases where the forceps was had recourse to in the Hospice de la Maternité of Paris, under her superintendence, and it presents a most unfavourable view of the practice. “*Marche rapide de la Peritonite*” seems to have been a very ordinary occurrence in that hospital, and the proportion of deaths must appear extraordinary to British practitioners. In the author’s opinion, there are three circumstances which explain the frequent fatality of this operation in France, viz., the unwieldy form of the instrument. *Se-*

condly, it being applied while the head of the infant is still within the uterus ; and, *thirdly*, its indiscriminate use in cases of actual disproportion, by which the author means a deficiency of space in the apertures of the pelvis, for any unusual size of the infant, independent of monstrosity or disease, can be overcome by the compression of well adapted forceps.

As the author, in the year 1794, published an Essay in the eighth volume of the second decade of Dr Duncan's Medical Commentaries, (page 400), on the utility of Dr Lowther's lever, it may perhaps be expected, that he should explain the reasons which for many years have induced him to discountenance the use of that instrument, excepting in face cases, where the practitioner is called too late, to accommodate the infant, by the manual assistance already described.

When he began practice, he was taught to expect the frequent occurrence of protracted labours, and the precepts and example of Dr

Lowther, who was one of the most judicious teachers whom he ever knew, led him to believe, that the instrument which the doctor always carried in his pocket, might at all times enable him to save the patients much suffering. But he soon found, that by limiting the first stage of labour to twelve hours duration, as already explained, laborious labours very seldom occur, and that when they do, the mechanical expedient which they require should enable the practitioner both to supply the vis a tergo, and to accommodate the infant to the passage. While the forceps combines both powers, with the additional advantage of lessening, to a certain degree, the size of the infant's head, Lowther's lever possesses only the former, and that too in an imperfect degree; for Dr Lowther always said, that without labour pains it had little effect. His calculation was, that, by its use, the efficacy of the labour throes could be doubled.

SECTION III.—THE THIRD ORDER OF LABORIOUS LABOURS.

THIS order comprehends all those distressing cases where there is a disproportion between the infant and the apertures through which it must pass. Such cases are to be distinguished from those constituting the first and second order, chiefly by attention to the effect of the labour pains, the relative situation of the infant's head, and the condition of the passages.

For the purpose of understanding the means of distinguishing those cases, it is necessary to notice the several causes of this order of laborious labours, and the author considers that the most satisfactory manner of doing so is, to state briefly those causes which he has met with in practice, and to add his opinion on the probability of some obstacles to the progress of the infant which have been described by authors.

It may seem superfluous to remark, that the

resistance may arise from the state of the infant, or from that of the uterus or vagina, or from that of the bones of the pelvis singly or collectively.

Firstly, The infant may have attained an unusual growth, with or without ossification of the sutures, particularly of the sagittal suture. Of both deviations the author has met with a few instances. He had once in his possession a portion of the foetal cranium, where the parietal protuberances had been four and a half inches asunder, and where there was a prominent bony ridge on the surface of the sagittal suture.

Enlargement of the head from hydrocephalus is occasionally met with. The following are the lineal dimensions of the skeleton frontal, parietal, and occipital bones of an infant, whose head the author was obliged to open some time ago. The frontal bone, from the root of the nose to the point forming the frontal corner of the anterior fontanelle measured four and a half inches; the breadth of the same across the

brows at the widest part also four and a half inches. The parietal bone from its corner next the anterior part of the temporal bone to that next the lambdoidal suture measured five and five-eighths inches. And from its corner next the anterior fontanelle to its corner next the base of the occipital bone six inches. The occipital bone, from its point next the vertex to its union with the foramen magnum, measured three and one-fourth inches. And in its broadest part laterally three and three-fourths inches.

Some notion may be formed of the extraordinary size of this head by comparing these dimensions with those of an infant weighing seven pounds, as specified in the subjoined note.*

Soemmering has described a series of mon-

* In an infant weighing at birth seven pounds avoirdupois, the dimensions in the same lines are as follows:—

Frontal bone, two and a-half inches by two.

Parietal bone, four and one-eighth inches by three and three-fourths.

Occipital bone, two and a-half inches by two and a-half.

strous foetuses in whom two heads were joined in various proportions, and the author has one specimen of that kind in his possession, where there are two heads with a single face, but he did not witness the labour of the individual who produced that monster.

He has been called to several cases where the hands and arms had been allowed to come down along with the head. In one case it was too late to save the patient.

Malposition of the head, from its long diameter being firmly wedged within the short diameter of the brim, is not an unfrequent occurrence, especially among the lower ranks; and, in the early part of the author's life, he was called to a number of such cases.

Secondly, Polypous tumours attached to the internal surface of the uterus, scirrhusity of the cervix uteri, enlargement of the ovary, swelling of the linings of the pelvis, tumours attached to the internal surface of the pelvis, accu-

mulations of fœces within the rectum, cicatrix of the vagina, and malformation of the external parts, are the several obstacles arising from the condition of the passages, which the author has actually witnessed.

Of the above causes, he has met with four instances where individuals had become pregnant, in whom the external orifice was so small that it could barely admit the introduction of an ordinary quill, and one where there was a cicatrix in the vagina. Two remarkable cases of the latter obstacle are recorded in the Appendix. Dr Collins has mentioned two cases of the same kind, in one of which the patient was saved.

Certain alleged obstacles to the safe progress of the infant through the natural passages have not fallen under the author's observation, and therefore, perhaps, he ought not, consistently with his views in this work, to advert to them, and yet the importance of the subject induces him briefly to notice them.

An accumulation of urine in the bladder is the first of these. That this sometimes happens during protracted labour, consists with the author's knowledge, but he has never met with any instance where it prevented the infant being drawn alive through the natural passages.

Stone in the bladder, in one case upon record, opposed a fatal obstacle to the birth of the infant.* Had the author been called to such a case he should certainly have proceeded to extract the infant piece meal, before symptoms endangering the life of the parent had taken place.

Dr Drew published, several years ago, a very interesting account of an obstacle to the progress of the infant, which the author was at first inclined to discredit. It is inserted in the first volume of the Edinburgh Medical and

* Edinburgh Medical and Surgical Journal, vol. xxxi., page 56.

Surgical Journal, page 20. In a patient not pregnant, who died in consequence of a tumour, which completely filled the pelvis, and obstructed the passage both from the bladder and the rectum, he ascertained, by dissection, that the tumour was attached by a strong root, of a hard gristly nature, to the right sacro sciatic ligament. This tumour was perfectly round, about sixteen inches in circumference, of a fat gristly substance, without any appearance of circulation in it, and was easily separated from the parts in which it was imbedded by means of the fingers, without the laceration of either vascular or muscular substance.

Within less than a year, Dr Drew was called to a case of labour, where the delivery seemed to be obstructed by a similar tumour. The doctor proposed an operation, and it was performed with such success, that a living child was born, and the patient had a complete recovery. The authenticity of this case is attested by Dr Power, Dr Hannan and Mr Pack.

Respecting the necessity for the operation in this case, the author for a long time had some doubts, founded partly upon his experience of cases of *ædema* of the external parts, where immense swellings gradually subside during the progress of labour, and partly upon the event of a case which he had attended, where there was a large incompressible tumour imbedded in the right labium, which nevertheless permitted the safe birth of the infant. It was his belief, that any tumour attached to the sacro sciatic ligament, might, in the progress of labour, be so pushed into the muscles on the back of the pelvis, as to allow of the passage of an infant through the vagina.

But, on attentively considering Dr Drew's case, he is now convinced that he had formed an erroneous judgment. As the tumour weighed two pounds and a-half, and measured fourteen inches in circumference, and was situated between the sacro sciatic notch, and tuberosity of the ischium, it is evident that it could not have been pushed out of the pelvis.

Thirdly, With respect to the state of the pelvis, he has sometimes found it defective in the ordinary apertures from natural formation, but much more frequently from altered texture of the bones.

In some of those cases the innominata and sacrum were naturally smaller than usual. In others, the base of the sacrum was narrow, while the innominata were of the usual size. For several years he shewed to his pupils a pelvis, where the base of the sacrum had receded, and had enlarged the antero posterior diameter at the brim, while its apex having advanced, greatly diminished the space between the coccyx and pubes.

Softness of the bones of the pelvis is certainly the most frequent cause of diminution of its apertures, and it is well known that this disease may take place in early childhood as well as after adult age. Generally speaking, if rickety female children live till puberty, the apertures of their pelvis are not very defective, even al-

though the person be a good deal deformed. But two remarkable exceptions to this rule are exhibited in skeletons in the author's possession, as particularly described in the Appendix.

When the softness of the bones occurs after puberty, it has been found to occasion much greater deficiency of space than in cases of rickets. In that latter disease, the brim is most commonly affected, and while the cavity is perhaps scarcely half the ordinary depth, the outlet is often wider than usual. In cases of malacostion, on the other hand, the several apertures, of the brim, cavity and outlet, are apt to be greatly lessened, and the depth of the cavity to be augmented by the jutting in of the lumbar vertebræ and promontory of the sacrum, and by the approximation of the ilea, so that the rami of the pubes and ischia are brought almost in contact, while the acetabula are forced inwards. These several deviations are particularly specified in the Appendix.

Exostosis of the bones of the pelvis is so rare an occurrence in child-bearing women, that the author has only met with one instance in the course of his practice. The poor woman, after having been five days and nights in labour, (having four years before had a living child) had been delivered of a still born infant. As the placenta did not come off in the ordinary time, the author was sent for. The extraction of the placenta proved unavailing, for the woman sunk in a quarter of an hour. It was found that an exostosis, the thickness of an ordinary sized finger, extended along the whole internal surface of the symphysis pubis, and had narrowed both the brim and cavity of the pelvis.

Where the uterine contractions cease for a certain time to advance the infant, supposing that the patient has been properly treated from the beginning of labour, if the bulky part of the head remain above the brim of the pelvis there is reason to fear that there is a disproportion, unless some other part of the head than

the vertex is forced foremost. The same conclusion may be formed, if, after the head have been advanced as far as the sacro sciatic ligaments, it remain wedged in the passage.

Under either combination of circumstances, it becomes necessary to examine, with great care, the dimensions of the pelvis. This is best done by means of the fingers, as every pelvimeter hitherto invented, whether for external or internal application, is liable to mislead,* even where the resistance arises from deformity of the pelvis.

If there be not an aperture measuring four inches by three, the uterine contractions cannot propel any other than an infant under the usual size, and consequently, if, after a fair trial of the effects of those contractions, the infant remain wedged, the case must generally be referred to the third order of Laborious Labours.

* Every practitioner should carry in his pocket a portable foot-rule.

Young practitioners, however, must be particularly cautioned against two errors, *first*, mistaking the lengthening of the infant's head, which is the effect of compression, for its actual advance ; and, *secondly*, the not giving a fair trial to the uterine contractions.

The former of those errors is to be avoided by a careful examination of the posterior part of the pelvis. So long as no part of the head is in contact with the anterior surface of the sacrum, there can be no real advance of the infant.

As to the latter error, it is to be recollected, that if the cavity of the pelvis be very shallow, and the outlet wide, the uterine contractions sometimes squeeze the head through the brim, even although it be obviously defective. The subjects of those cases are little deformed women, who have been rickety from their childhood. The author has attended several women of this description, who have borne healthy infants of the ordinary size, although the free

space between pubes and sacrum certainly did not exceed three inches.

While, therefore, in such patients, the labour pains continue regular, and no untoward symptom occurs, it is the duty of the practitioner to support the strength and spirits of the woman, and to give time, always keeping in view that (to use a metaphorical expression) he is to ascertain what nature can do, not what she can suffer. If this obvious rule be attended to, no patient can be reduced to the situation described by Dr Collins, in the following words, (page 16.)

“ When uterine action continues regular and strong for twelve or twenty-four hours after the os uteri is dilated, or nearly so, without the child’s head making progress, it being firmly compressed in the pelvis, not leaving space for the introduction of the finger to feel the ear, or in some, the passage of a cathether into the bladder ; the urine perhaps retained from severe pressure on the urethra, or when re-

moved, bloody or very scanty, and of a deep colour ; the patient complaining of acute pain on pressure, in any part of the abdomen, the pulse being at the same time hurried, and the strength failing ; these are symptoms indicating the use of the perforator, and their being urgent or otherwise, should make us deliver sooner or later.”

According to the author's conviction, an intelligent and attentive practitioner can always decide whether there be any considerable disproportion, long before the symptoms thus described take place. He has certainly seen many cases of that description, but he has always considered that they were the effects of mismanagement, and that the great advantage which the better ranks of society enjoy in being able to command the attendance of scientific practitioners is, the exemption from those untoward symptoms which arise from indecision and procrastination. It is a well known fact in this city, that for above thirty years past, no patient under the author's care, has been in

real labour for a longer time than twenty-four hours, whatever may have been the nature of the case.

On the supposition, however, that the practitioner is not called to the patient till she had been a very considerable time in labour, the marks by which he is to distinguish the precise order to which the case is to be referred, have been already explained.

Where cases belonging to this order of laborious labours have, from ignorance, been left to the natural resources of the constitution, and the patients have survived, the ordinary effort has been the following. The continued pressure upon the naval string first destroys the life of the infant—putrefaction then follows—the teguments of the head burst—the brain is discharged—and the putrid mass is eventually thrown off.

Of this natural process, the author has had an opportunity of seeing a few cases, but in all

of them the life of the patient was preserved at the expense of much local injury.

There is a well authenticated instance of another effort of nature, by which the poor sufferer was relieved, and eventually saved, viz., the bursting of the uterus, and of the parietes of the abdomen, and the expulsion of the ovum through the laceration.*

British practitioners have most properly founded the practice, in cases of this order of laborious labours, upon an imitation of those natural processes. If there be such a disproportion between the infant and the apertures that it cannot be forced through them alive, either by the natural contractions of the uterus, or by the use of the forceps, it must be quite evident that the only chance of saving the patient, is lessening the infant's head, and drawing it forward by mechanical means provided

* Edinburgh Medical Essays and Observations, vol. v., page 439.

there be sufficient room for accomplishing that object with safety to the parent. There are, therefore, two questions to be determined in those cases, *first*, if there be an actual impossibility of the infant being drawn alive through the natural passages; and, *secondly*, if there be sufficient space for the safe extraction of the infant when mangled, by means of the perforator.

As to the former of those questions, the marks by which it can be determined have been already detailed, but with respect to the latter, there has been much variety of opinion amongst the profession, and it must be admitted that it is sometimes one of the most difficult which can be solved.

This difficulty arises from two circumstances, viz., the difference of size of the infant even at the full period, in different cases, and the impossibility on many occasions of ascertaining the precise dimensions of the apertures of the pelvis in the living subject.

That the head of an infant weighing seven pounds, can be so diminished, as to be safely brought through an aperture which could not permit the passage of a foetus of eleven or twelve pounds weight, is a self-evident proposition, but while the infant remains above the brim of the pelvis, its size cannot be estimated.

Excepting in cases of great deficiency of space, it is impossible to ascertain with geometrical precision, the exact dimensions of the aperture, and therefore, in the ordinary cases which occur, the precept which was so strenuously and plausibly urged by the late Dr Osborne, that unless there be a free space to the extent of three inches between pubes and sacrum, an infant at the ordinary period of utero gestation cannot be passed alive, might lead to the most serious errors.

For, in the *first* place, as already stated, it is impossible, in many cases, to ascertain the precise dimensions at the brim of the pelvis, and

a miscalculation of the sixteenth part of an inch might be fatal to the life of the infant.*

Secondly, There must be always some difficulty in ascertaining whether the woman be at the full period of pregnancy, and therefore, there is always a chance that the infant may be under the ordinary size.

Thirdly, It is a well known fact, that a female infant of the ordinary weight, can safely pass through an aperture which cannot permit the passage of a male infant of the same weight, but in laborious labours there is no method of ascertaining the sex of the infant.

* The author has been accustomed to illustrate this practical remark to his pupils, by a very simple mechanical demonstration. He first shews the smallest possible aperture through which the fœtal head of the ordinary size can be squeezed, and he then covers the head with a common towel, and proves the utter impossibility of its then passing through the same aperture. He does not believe that the addition of a common towel can increase the diameter of the head more than the sixteenth part of an inch.

In cases of doubt, therefore, a fair trial of the powers of nature must be permitted, watching carefully the progress of the case, according to the rules already explained.

When the disproportion is very considerable, the great difficulty is, to ascertain whether it be possible to extract the mangled infant with safety to the parent, and to inexperienced persons it may appear wonderful that so much variety of opinion should prevail upon this question. It may be supposed to resolve itself into a mechanical problem, and many respectable practitioners have considered it as such, it being only necessary, according to their doctrine, to determine to what extent the bulk of the infant can be reduced.

The result of the experience of those practitioners in whom confidence can be placed, is, that in cases of deficiency of space, the whole upper part of the cranium of the infant can, in general, be safely removed by means of the perforator and crotchet, but that the base of the

cranium cannot be lessened, and hence the head of an ordinary sized infant must measure four inches in length from the chin to the occiput, between two and a-half and three inches, in breadth across the base of the skull, and at least one inch and a-half in depth, reckoning from the root of the nose to the tip of the chin.

Dr Hull, in his *Observations on Mr Simmons's Detection, &c.*, published in 1799, in relating a set of experiments instituted to ascertain the smallest space through which a dead infant could be extracted through apertures made in a strong board, says, (page 401),—

“ I then procured a foetus of moderate size, which had been brought into the world by the perforator and crotchet, through a pelvis very much contracted, in consequence of malacostion. Its head had been necessarily very much reduced in order to accomplish the delivery, and I diminished it still further by cutting and breaking away the whole of the parietal bones,

and that part of the frontal bones which remained elevated above the base of the cranium. I also bent the os occiputis a little behind the foramen magnum, (because I know this may be easily done in delivering with the crotchet) so that it would either lie back upon the neck, or forwards upon the base of the cranium. When thus reduced, this foetus weighed five pounds one ounce. It measured, from the toes to the base of the skull, seventeen inches—from the chin to the top of the nose, when very strongly compresssd by the callipers, one inch and a half, and nearly half an inch more from the chin to a line drawn from the top of one orbit to the other; from the external canthus of one orbit to that of the other, two inches and three quarters, and the same nearly from one zygomatic arch to the other; from the top of the nose to the posterior part of the condyles of the os occipitis, three inches and three-quarters.”

Professor Burns says (eighth edition, page 467), “ I have carefully measured these parts

placed in different ways, and entirely agree with Dr Hull, a practitioner of great judgment and ability, that the smallest diameter offered is that which extends from the root of the nose to the chin. For in my experiments, after the frontal bones were completely removed and the lower jaw pressed back, or its symphysis divided, so as to let its sides be pushed away, this did not in general exceed an inch and a half."

Assuming that these calculations are correct, for they have been confirmed by the experience of the author, it follows, upon the plainest mechanical principles, that in order that an infant of the ordinary dimensions be extracted by means of the crotchet, there must be, at least, a free space measuring three inches by one and a half. How far it may be *safe* to extract a mangled infant through such an aperture is a consideration to be noticed by and by.

Dr Osborne, to whose eminence the author has alluded in the first part of this work, believed that he had safely extracted an infant of

the ordinary size by means of the operation of embryulcia, through an aperture measuring “only one inch and three-quarters at the utmost, and in the widest part, and that only on one side of the projecting sacrum, while the space between it and the symphysis, and on the other side, barely amounted to three-quarters of an inch.”

Dr Conquest of London, in the fourth edition of his *Outlines of Midwifery* (published in 1827), has stated, (page 133,) that “several instances are authenticated by men of the highest integrity and eminence in the profession, in which children have been delivered after the perforator has been used, although the distance between pubes and sacrum did not exceed one inch and a half, and in which there did not appear to be more than two inches from one side of the pelvis to the other,” which, according to the expressions used, seems to mean from one ilium to the other.

Very different is the opinion of Professor

Davis. He says (page 304 of *Elements of Operative Midwifery*), “ If we suppose the conjugate diameter not to exceed two inches and a half, the extraction of the basis of the foetal skull will necessarily be attended with much additional difficulty. But if the intermediate space between the symphysis of the pubes and the promontary of the sacrum be presumed to be no more than two inches, then the attempt to extract a full grown child by the natural passages, by means of the crotchets in common use, or by any crotchets used with much force, or for a long time together, would expose the subject of such an operation to no little risk of contusion of the maternal structures concerned in the labour, and therefore the woman herself to the eventual loss of her life. I wish to be considered as making this statement very deliberately, and with due advertence to the opinions of Dr Osborne and others, who have maintained a contrary doctrine.”

Dr Dewees says (page 573), “ By a sufficient diameter, I mean where there is at least two

inches in the antero posterior, and at least three and a half, in the transverse, below this, delivery per vias naturales, I repeat, I believe to be impossible. And it is a moot point, whether, with a diameter of full two inches, &c., the risk to the mother is not as great as the cæsarean section, yet, in this instance, and with a dead child, the crotchet would merit the preference, as it is apparently the less severe operation, and one that would more certainly meet the public approbation."

With respect to Dr Osborne's estimate of the dimensions necessary to allow the safe passage of a mangled infant, the author's father proved, above forty-three years ago, that the extraction of an ordinary sized infant through such an aperture is physically impossible, and he publicly called upon Dr Osborne* to extract, in presence of competent witnesses, a mangled infant, through an aperture in a piece of wood

* Hamilton's Letters to Dr Osborne, page 135.

or metal, of the shape and dimensions which he had described. The doctor readily accepted this professional challenge, but although he lived sixteen years after having doing so, he never made any further communication on the subject.

The experiments of Dr Hull, already referred to, are so conclusive in deciding this point, that probably Dr Osborne himself was convinced of his error. That he really believed, when he published the case of Elizabeth Sheerwood, that he had formed a correct judgment of the apertures of her pelvis, the author has never doubted. But it has always been his conviction that the apparent narrowness was the effect of the swelling of the soft parts lining the pelvis, and that, in consequence of the reduction of the infant's head, the swelling had subsided before the extraction of the infant was attempted ; and upon no other principle can it be explained that, on raising " one side of the fore part of the head, and turning it a little edgeways," he " immediately and easily suc-

ceeded" in accommodating the infant* and accomplishing the delivery.

Upon what authority Dr Conquest has been led to believe that a full grown infant has been extracted, through a pelvis measuring no more than an inch and a half between pubes and sacrum, and not more than two inches from one side of the pelvis to the other, the author is at a loss to understand. He has never met with such an allegation in the course of his reading, and he has never seen, in any anatomical museum, a pelvis of an adult female which did not measure more than two inches from one side to the other. The case appears to him to be physically impossible.

Dr Collins states, (page 302), that "the most defective pelvis he had ever witnessed in the Dublin Lying-in-Hospital measured two inches and a half from pubes to sacrum."

* Osborne's Essays, page 255.

While Dr Osborne and Dr Conquest have erroneously supposed that a mangled infant may be extracted in a living woman, through an aperture far less than the same infant could be drawn through a similar aperture cut in a piece of wood or metal, Dr Davis and Dr Dewees have erred in the opposite extreme, for there can be no doubt that an infant of the ordinary size, at the full term, may be drawn, by means of the crotchet, through an opening measuring one and a half by three inches.

Whether, under such circumstances, the use of the crotchet be safe for the parent, is a very different question, and seems to have been totally overlooked by Dr Osborne, who has more than insinuated, that wherever the operation of embryotomy is practicable, it secures the recovery of the parent.

Against this doctrine the author has always protested, warning young practitioners that Dr Osborne's estimate of the safety of the operation of embryulcia is founded upon data, the

fallacy of which can be readily explained ; for, in the *first* place, in the greater number of crotchet cases during Dr Osborne's professional life, the obstacle was so trifling, that the opening of the cranium, and the discharge of a small portion of its contents, enabled the practitioner to extract the infant with comparative ease and safety.

Secondly, In cases of greater disproportion, where much force was required, and where the patients had sunk in the progress of lying-in, practitioners abstained from putting their ill success upon record, or persuaded themselves that the fatal event had arisen from some other cause than injuries from the delivery. And,

Thirdly, In cases of very great disproportion, women were allowed to die undelivered from the unwillingness of the practitioner to incur responsibility. Dr Hull has recorded some remarkable evidences of this fact, as having happened in Manchester within his knowledge.

Dr Osborne's *Essays on Laborious Labours* were published in 1792, and the author's father, in the same year, felt himself compelled to address a series of letters to the doctor, for the purpose of correcting certain misrepresentations and errors in that work. In reference to Dr Osborne's opinion on the safety of the operation of embryotomy, expressed in the following words, (page 442), "I will venture to assert, that instead of only four or five women being saved out of fifty," (where the operation of embryotomy had been had recourse to), "the proportion is at least reversed, and the number stated in the" (Professor Hamilton's) "quotation to be saved, is at most the number lost." The author's father replied, (page 68), "The fact probably is, that in this respect we are both equally wrong in our calculation."

Accordingly, within little more than a year from that date, Dr Clarke published his *Reports of the Practice in the Dublin Lying-in Hospital*, by which it appears that, in 49 cases where

he had been obliged to tear away the infant piecemeal, sixteen of the women died, being one in three.

These considerations occurred to the author at an early period of his professional life, and he has always held that, in those deplorable cases of great deficiency of space, the safety of the operation, as well as its practicability, should be ascertained before proceeding to so dangerous an expedient.

He has by experience been led to believe, that the safety depends upon the resistance being confined to one portion of the passage, that is, to the brim, or to the outlet, or to any intervening point, as in the case of a tumour. His meaning may be best illustrated by the two following cases.

Dr Leffant and Dr O'Brien, in the year 1807, sent for the author one night at a late hour, to see a poor woman in labour, in whom the pelvis had apparently the shape and apertures so similar

to those of one of the subjects on whom the Cæsarean operation had been performed in the Royal Infirmary of Edinburgh, that those gentlemen instantly recognized the similitude. He learned that the woman had been rickety in her childhood, but had been in good health previous to labour. On examination, the aperture at the brim of the pelvis was estimated at little more than an inch and a half between pubes and sacrum. The outlet seemed sufficiently capacious, and the cavity was so shallow, that it did not require the full length of the forefinger to measure the space between the point of the coccyx and the promontory of the sacrum.

The author informed the gentlemen that this case furnished, in his opinion, a fair example of the lowest dimensions permitting the operation of embryotomy with safety to the parent, because the resistance was limited entirely to the brim, and therefore, that the injurious pressure consequent upon the operation would be confined to a narrow band.

Thus reasoning, he opened the head of the infant about midnight, and between nine and ten o'clock next morning he proceeded to the extraction. The operation was the most difficult he had ever undertaken, requiring such an exertion of force, that he was literally carried home in a sedan chair, drenched and exhausted, at half-past two in the afternoon. And yet this woman's recovery was so rapid, that, at the end of five days, she expressed an anxiety to be employed as a wet-nurse.

Let this case be contrasted with that of a poor woman, a patient in the Edinburgh General Lying-in Hospital, above forty years ago. Mrs Scott, aged thirty years, became in labour of her fourth child at three o'clock, A. M., March 31, 1795, and it was supposed that the liquor amnii was spontaneously discharged in the course of two hours. The pains having become very strong and frequent soon after this, the state of her pelvis was minutely examined, for it had been previously ascertained that she had been for some years affected with malacos-

tion, and that she had not only lost greatly in her stature, but had also become almost incapable of locomotion. It was found that, at the anterior part of the pelvis, the rami of the pubes and ischia approached so nearly, that it was with difficulty the fore-finger could be passed between them. The spinous processes of the ischia, however, were about two inches distant from each other, and posteriorly the point of the coccyx seemed at least two inches distant from the tuberosities of the ischia. The brim was greatly altered in shape. In its centre a triangle could be traced, each angle of which was distant about an inch and a-half from the other, and towards the ilia on each side, the space was evidently narrower. No part of the infant could be felt.

The pains continued with great force till a little past ten, A. M., when the head of the infant was found to press on the brim of the pelvis. Soon after this a consultation was held, when it was determined to wait for a few hours to ascertain whether the strong uterine contractions might force the infant farther into the pelvis.

About a quarter past eleven, A. M., the pains suddenly ceased, followed by vomiting, feeble pulse, pallid countenance, great exhaustion, and pain of the belly, aggravated on being touched. But there was no discharge of blood per vaginam, no breathlessness, nor could the limbs of the foetus be felt through the parietes of the abdomen. On examination, it was ascertained that the head of the foetus, covered by the membranes, was resting upon the brim of the pelvis.

As it was hoped that the apparent exhaustion was the effect of the violent sufferings at the commencement of labour, suitable means to support the strength were administered, but the symptoms of exhaustion having continued and increased, it was determined at half past one, P. M., to perform the operation of embryotomy, it being supposed that the apertures of the pelvis were such as to render that operation practicable.

This attempt, however, failed. As soon as

the perforator was pushed forward, the head of the infant completely receded, a clear proof that the uterus had burst. No further attempts were made to deliver this poor woman, and she lingered on till a quarter past eight, A. M., of the 2d of April.

After death it was found that the uterus had burst at the left side. The rupture was in the longitudinal direction, not transverse, was seated in the cervix, and extended apparently about four inches. The fœtus, which was quite putrid, was on the left side of the belly, so completely enveloped by the membranes, that it occupied the least possible space. The lobulated surface of the placenta formed the outer surface of the ovum on the right side. It appeared that the perforator had penetrated only the external lamella of the membranes. There was no liquor amnii.

The following are the dimensions of the pelvis :—At the brim, from the centre of the sacrum to the most diverging point of the

pubes $3\frac{1}{2}$ inches ; from the same point to the part at which the pubes approximated $2\frac{1}{4}$ inches ; from the sacrum to the linea innosinata at the top of the acetabulum $1\frac{5}{8}$ ths ; therefore, the short diameter, at the brim, was for the extent of an inch, $2\frac{1}{4}$ inches, but in the remainder of the space only $1\frac{5}{8}$ ths. At the outlet the space between the tuberosities of the ischia was $\frac{5}{8}$ ths of an inch. The spinous processes of the ischia were distant $3\frac{1}{8}$ th. The point of the coccyx, when drawn back, was distant from the junction of the ischia $2\frac{1}{2}$ inches, and the same from the tuberosity of the ischium on the left side, but on the right side it was half an inch less. The depth of the pelvis, both anteriorly and posteriorly, was $4\frac{1}{2}$ inches.

On considering the apertures of the pelvis of this poor woman, it is evident that a mangled infant could have been extracted through them, but no rational practitioner could have expected the mother to have survived such an operation. It may be asked, then, why an attempt was made to use the crotchet ? As there was no

evidence of the infant being alive, it was deemed eligible to accomplish the delivery, as the circumstance of a woman dying undelivered could not fail to alarm the other patients in the hospital, which at that time was a new institution, and had been the subject of sectarian opposition.*

From these premises the author considers himself warranted to conclude—

Firstly, That if the deficiency of space be confined to one portion of the passage, viz., either the brim or the outlet, or the cavity, and if it leave a free aperture admitting the extraction of a mangled infant of the ordinary size, the operation of embryulcia may be safely accomplished. And,

* In order more fully to illustrate the practice in those deplorable cases, the author has added, in an appendix, diagrams of the several degrees and varieties of diminished apertures of the pelvis, taken from specimens in his own collection.

Secondly, That if the resistance extend throughout the whole passage, more especially if the cavity of the pelvis at its anterior part be deeper than usual, that operation, though mechanically practicable, cannot be performed with safety to the parent. This practical distinction he holds to be of much greater importance than has hitherto been supposed, and therefore he is most anxious to impress it on the notice of the profession.

Happily cases of extreme disproportion occur rarely, and it is a most fortunate circumstance that such cases are readily recognized. That there have been some deplorable instances of mistakes, and of injuries from ill directed investigations, even within these twenty years, the records of several publications incontestably prove.*

* See particularly, Dr Kender Wood's case, London Medico Chirurgical Transactions, vol. vii., page 264.

Professor Davis's Elements of Operative Midwifery, page 49.

To the less experienced members of the profession, it may therefore be useful to state the cautions which the author has adopted, in ascertaining the precise shape and apertures of the pelvis in cases of great disproportion.

Firstly, His great object always has been, to put the patient to as little pain as possible. And therefore,

Secondly, If the outlet of the pelvis be so defective as to preclude the safe extraction of a mangled infant, he has never attempted to ascertain the dimensions of the brim. Accordingly, in the last case where he had to perform the Cæsarean operation, he found the aperture of the outlet incapable of permitting the introduction of a half crown piece, and he deemed any further examination both unnecessary and injurious.

Thirdly, Where the deficiency of space is principally in the brim, he has considered it justifiable to introduce the hand into the vagina

for the purpose of distinguishing the shape and dimensions of the aperture, and also the depth of the pelvis ; but he holds that this examination should be made only once for all.

Every practical man must know, that the most perplexing cases of laborious labour which occur, are those in which the disproportion is trifling ; and therefore, at the risk of appearing prolix, the author, in addition to what he has already said on the subject, must state, with great deference to Dr Collins, that the rule laid down in the following words may mislead the inexperienced, and ought to be expressed under many modifications. He says (page 17),—

“ The difficulty in such cases, is caused by a disproportion between the child’s head and the pelvis ; and except where this is very great, no individual can foretel whether the uterine action may be sufficient or not to expel the child ; therefore, the most certain proof we can have of such disproportion existing is, the head remaining stationary for a number of hours

after the dilatation of the mouth of the womb, uterine action during this time continuing strong. This is a more certain proof than any derived from the most accurate examination ; for though, in this way, we may be able to inform ourselves, with tolerable correctness, as to the size of the pelvis ; yet the size of the child's head, its degree of ossification, or the amount of compression it may undergo from uterine action, never can be correctly ascertained. Let it be carefully recollected, at the same time, that so long as the head advances ever so slowly, the patient's pulse continues good, the abdomen free from pain on pressure, and no obstruction to the removal of the urine, interference should not be attempted unless the child be dead."

Again, the author must repeat and enforce his admonition to practitioners, to continue not only in attendance, but also to pay unremitting attention to the effect of the labour throes from the commencement to the termination of the second stage of all labours. Many of the

cases in Dr Collins's valuable work evince the vast importance of this precept.*

From reading Dr Collins's observations on the use of the stethoscope in laborious labours (page 18), and finding it repeatedly stated, in the details of his recorded cases, "that the child being dead, as indicated by the stethoscope, the head was lessened &c," his impression is, that in cases of disproportion, it was the doctor's rule to delay giving assistance till the death of the infant was placed beyond doubt by means of the stethoscope. If this interpretation be correct, the author feels compelled to express his disapprobation of the practice.

Admitting the impossibility of the infant's being born alive through the natural passages, it is surely the bounden duty of the practitioner to relieve the poor woman as soon as the ne-

* Collins, page 75, No. 6 ; page 77, No. 9 ; page 80, No. 15 ; page 103, No. 33.

cessity for artificial delivery is ascertained. In many cases, if the practitioner were to wait for the death of the infant in utero, the life of the parent would be placed in great jeopardy. Indeed, several women seem to have suffered in the Dublin Lying-in Hospital, in consequence of procrastination.*

Whenever the necessity for interference in those deplorable cases has been ascertained, the author has recommended and practised immediate delivery.

Having thus explained the means of distinguishing cases requiring the operation of embryotomy, it would have been unnecessary to enter into any details respecting the operation, were it not that certain mechanical contrivances for its performance, calculated, as the author believes, to mislead young practitioners, have

* *Vide* Collins, page 300, No. 32; page 303, No. 10; page 462, No. 49; page 464, No. 150 and 173; page 469, No. 425; page 470, No. 509; page 471, No. 555 and No. 584; page 472, No. 626; page 473, No. 665.

been recommended by gentlemen of deserved professional eminence.

For this shocking operation, the instruments which the author has always used are Orme's perforator, and a crotchet made entirely of steel. The cutting part of the perforator is trocar pointed, with equilateral edges. The point of the crotchet is so blunt, that if it slip in the course of the operation, it can be received between the fingers of the operator with impunity.

Opening the head with the perforator is, in cases of extreme disproportion, apparently both difficult and dangerous. Dr Osborne* says, "even the first part of the operation, which, in general, is sufficiently easy, was attended with considerable difficulty and some danger. The os uteri was but little dilated, and was awkwardly situated in the centre and most contracted part of the brim of the pelvis." It is

* *Vide Osborne's Essays, page 245.*

a fact, that where the brim of the pelvis is very narrow, the natural contractions of the uterus do not dilate its orifice to a greater extent than that of the aperture at the brim, but the author has always found, that after a certain degree of dilatation, gentle pressure on its edges, by means of two fingers during each pain, in a very short time clears the head from this impediment.

Where the disproportion is slight, after the cranium has been opened, and its contents completely removed, it is proper to proceed to extract the infant, but where the apertures are merely such as to permit the safe performance of the operation, an interval must be interposed between the opening of the head and the extraction of the person.

Certainly Dr Osborne had the merit of first pointing out to the profession the importance of this practice, shewing that two advantages result from the delay, viz., the renovation of the patient's strength, and the putrefaction of the infant, thus affording a probability of uterine

contraction assisting the practitioner, and of the mangled infant being more easily moulded to the passage.

A much more important effect, however, results from this practice, viz., the subsidence of the swelling or incipient inflammation of the soft parts lining the pelvis, which must be the necessary consequence of the resistance to the progress of the infant from disproportion.—The author has never found it necessary to wait longer than from twelve to fifteen hours, as in all the cases he has hitherto attended, uterine contractions came on within that space of time, and he always considers it his duty to take advantage of them.

When it is deemed proper to begin the extraction of the infant in those cases of great deficiency of space, the crotchet will be found a much more powerful means than the ingenious contrivances recommended by Sir Thomas Bell, Professor Davis, and Dr Conquest, for as the whole upper part of the in-

fant's head is necessarily removed, there are only two parts which afford a sufficient hold, viz., the foramen magnum, and one of the eye sockets, and the instruments alluded to are quite inapplicable to those parts.

Dr Osborne preferred the foramen magnum, but he himself admitted, that it is very difficult to get the crotchet into that part, whereas, by fixing it in one of the eye sockets, the practitioner is enabled to bring the face foremost, by which the infant takes up the least possible room.*

Perhaps it is unnecessary to state, that in conducting the extraction, advantage is to be taken of the labour pains, and the head of the infant is to be so directed, that it shall be drawn through the widest part of the aperture, guarding carefully the point of the crotchet, by means of two fingers of the left hand.

* Even in cases where the infant is in the most putrid state he has found the eye socket to afford a perfectly steady hold.

Those melancholy cases, where it is impossible to bring the mangled infant with safety through the natural passages, require the Cæsarean operation, for the proposals hitherto suggested for superseding that very dangerous expedient, must appear to every practical man to be quite inadequate. Thus, the division of the symphysis pubis, called the Sigaultian operation, has never been successful, but in cases of such trifling disproportion that the induction of premature labour would have secured the birth of a living infant without exposing the parent to any hazard.

As to combining the Sigaultian operation with that of embryotomy, the proposal was obviously absurd, and accordingly, the person who suggested it, when called to a case presenting the very obstacles which he himself had represented as warranting such an expedient, had neither the courage to perform it, nor the candour to confess, that he had made a rash proposal.*

* The patient had the Cæsarean operation performed on

One of the author's pupils sent him a letter dated February 17, 1805, a copy of which is inserted in the Appendix; proposing that, in cases of extreme deformity, the infant in utero should be cut into small fragments by means of a mechanical contrivance which he suggested and delineated.

Twenty years after this, Professor Davis of the London University recommended a similar expedient as a substitute for the Cæsarean operation (*Elements of Operative Midwifery*, page 305), and for the accomplishment of this, he contrived an instrument "combining the principles of a punch and a pair of scissors."

While the author gave, in 1805, all due credit for the ingenuity of his pupil's proposal, he stated his belief of the impracticability of such an operation as cutting the infant into fragments in cases of such deficiency of space

her by Dr Wood of Manchester, and the reader will find a diagram of her pelvis in the Appendix.

as prohibits the operation of embryulcia. He is compelled to urge the same objection still more strongly against Professor Davis's proposed operation with the osteotomist. It must be quite obvious, from the explanations in the preceding pages, that if the apertures of the pelves can admit of the introduction of this instrument, "together with the point of an index finger to feed it with successive purchases of bone," there must be sufficient space to extract a mangled infant by means of the crotchet. In the author's collection, as proved by the diagrams in the Appendix, there are pelves of individuals who had been actually in labour, through which it is demonstrable that Dr Davis's osteotomist and an index finger could not have been introduced.

Any extended observations on the Cæsarean operation are deemed unnecessary, cases requiring that resource being so rare. That in some very deformed women the only alternative is having recourse to that expedient, or allowing the poor creature to die undelivered,

is placed beyond all possibility of doubt, both by the preparations in his possession, and by the cases which he has actually attended. If, under such circumstances, where the chances are so much against the recovery of the mother, the sufferings of the patient were aggravated by the operation, it might induce a humane practitioner to hesitate about its performance ; but, in point of fact, the Cæsarean operation gives, comparatively speaking, little pain—the whole suffering being limited to a few minutes. The two individuals on whom the author had to perform that operation, expressed, in the presence of many witnesses, their gratitude for the speedy relief which they had obtained.

Professor Lizars's proposal to raise the temperature of the apartment in which the operation is performed, to between 80° and 90° of Fahrenheit's scale, seems well calculated to lessen the injurious effects of opening the peritoneal cavity.

He has only to add, that, having deliberated upon this subject from the earliest period of his professional life, he is convinced, not only that cases occasionally occur where there is no other resource than this dangerous expedient, but also that there are cases where it ought to be preferred to tearing the infant away piecemeal—in other words, that there are cases, as already explained, where the operation of embryulcia might be practicable, but could not be safe.

SECTION IV.—ON THE INDUCTION OF PREMATURE LABOUR.

WHERE married women, in whom the apertures of the pelvis fall under the ordinary proportions, have had the misfortune to have their first infant necessarily extracted piecemeal, they must feel anxious to have some means adopted, in the event of future pregnancy, for preserving their infant, and for lessening their own sufferings and danger.

It has been clearly ascertained, that no regulation of the diet of the parent can retard the growth of the foetus, but it is well known, that infants born five or six weeks before the completion of the ordinary term of pregnancy, may, with due care, be reared to maturity, while their bulk is so much under the ordinary size, that they can be safely expelled through an aperture through which a full grown infant cannot pass.

These considerations suggested to British practitioners the propriety of inducing premature labour in cases of deficient aperture, and it is recorded* that this subject was taken into solemn deliberation about the middle of last century, at a meeting of several of the most respectable London practitioners. On that occasion, the morality, the safety, and the utility of the practice were carefully investigated.

There was, it is said, no difference of opinion respecting the morality and the safety of the practice. Indeed, the morality could not be doubted, for the object is to preserve the life of an infant, which, if allowed to remain to the full period, could not be born alive. And as to the safety, there appeared every reason to presume, that the sufferings of the patient must be greatly lessened in consequence of the diminished size of the infant. The late Dr Meriman first called in question the safety of the operation, but the cases on which he founded

* Denman, vol. ii., p. 175.

his doubts on this point, were evidently cases of accidental coincidence, for the safety of the practice is now fully established.

With respect to the utility, there seems also to have been no difference of opinion. The size of an infant who has only resided seven months and a-half in utero, is so much under that of one at the full time, that it can be readily and safely expelled through a passage incapable of admitting the transmission of a full grown infant.

Foreign practitioners have denied the utility of the practice, and have accordingly repudiated it, upon the supposition that the infant must generally be the victim. Mons. Baudelocque says, paragraph 2011.—“ L'on ne rencontre presque jamais ces dispositions favorables au terme de sept ou de huit mois, chez les femmes dont la mauvaise conformation du bassin rend l'accouchement impossible au terme de neuf, et conséquemment chez lesquelles il semble qu'il seroit avantageux de le

forcer à se faire prématurément. Le col de la matrice, à l'époque du septième mois, est rarement entre-ouvert, et il est encore fort épais et très-ferme. Les douleurs, ou les contractions de ce viscère, ne pourroient alors s'obtenir que par une irritation mécanique assez forte et longtemps continuée ; mais étant contraires au vœu de la nature, ces douleurs ou ces contractions utérines cesseront le plus souvent au même instant qu'on discontinuera de les exciter de cette manière. Si on ouvre la poche des eaux avant que l'orifice de la matrice ne soit assez ouvert pour le passage de l'enfant, et l'action de ce viscère assez forte pour l'expulser, les douleurs se calmeront de même pour un temps, et le travail qui se déclarera dans la suite sera très-long et très-fatigant ; l'enfant, privé des eaux qui le protégeoient contre l'action de la matrice, étant alors pressé immédiatement par cet organe, sera victime de cette action, avant que les choses ne soient favorablement disposées pour son issue, et on perdra le fruit de tant de sollicitudes et de peines."

The experience of British practitioners has fully contradicted the above recited speculations of Mons. Baudelocque and other foreign practitioners. Thus, Mr Barlow of Bolton has stated,* that in the case of five deformed women, he had induced premature labour sixteen times, and that in two of them premature labour had taken place spontaneously. Twelve of the eighteen infants were born alive. Dr Denman recommended the operation in twelve cases, and seven infants were saved. Dr Merriman, senior, records,† that in ten cases of premature labour, he had succeeded in saving four infants. Mr Marshal, surgeon in London, saved one infant in four. Thus twenty-four infants out of forty-four were born alive. The result of Dr Merriman's practice has been,‡ that in thirty-three cases of labours prematurely

* Medical Facts and Observations, vol. viii.

† London Medical Review and Magazine for 1814.

‡ *Vide* Merriman's Synopsis, third edition, page 172.—
Dr Merriman states a very remarkable fact, viz., that of thirty-three cases of labour prematurely induced there were fifteen preternatural labours.

induced in the eighth month of pregnancy, on account of extreme distortion of the pelvis, twenty-one infants were still-born, four were born alive, but incapable of living above a few hours (in one of those cases, there were twins), and nine were born alive, and were capable of being reared.

In addition to those facts, the author can prove that the principle upon which this practice has been objected to by foreigners is quite erroneous. At an early period of his professional life, he certainly did consider those objections to be highly plausible, and therefore he endeavoured to find some means of inducing premature labour without rupturing the membranes. Adverting to the fact, that whenever the liquor amnii is accidentally discharged, at any period of pregnancy, uterine contractions naturally follow within a limited time, it appeared to him that the only explanation of the circumstance is, that the rupture of the membranes destroys the equilibrium between the contents and the containing parts of the uterus.

Thus reasoning, he tried in the very first case,* where he deemed it his duty to induce premature labour, the effect of separating a portion of the decidua from the cervix uteri, and labour followed within a few days. In some cases a week elapsed before any signs of labour came on, and in those cases he introduced a male catheter with an open extremity between the surface of the uterus, on its posterior part, and the decidua to the height of about five inches, and then, by means of a silver wire, he punctured the membranes, and drew off about a table spoonful of the liquor amnii. Labour

* Professor Davis, in his *Principles and Practice of Obstetric Medicine*, (page 1150,) says, that "the method of performing the operation with the finger was first suggested and adopted by the late Mr Jacob Jones of Finsbury Square. It was performed for the first time, and in peculiar circumstances, by that gentleman, on St George's day, THIRTY-SEVEN YEARS AGO." The author takes the liberty to state, that he performed the operation for the first time in the year 1795; and that, for several years, he stated, in lecturing, that he declined describing publicly the precise method of performing the operation, but should mention it to any gentleman privately, who might wish to know the particulars.

pains regularly came on within twenty-four hours. He is now however convinced, from the experience of the last ten years, that if there be a sufficient portion of the decidua separated from the cervix uteri, there is no occasion for the introduction of the open male catheter.

Previous to the 26th January 1836, the author brought on premature labour in twenty-one individuals, on account of defective apertures, viz., in fourteen once,—in one twice,—in three thrice,—in two five times,—and in one ten times. Of the forty-five infants thus prematurely brought into the world, forty-one were born alive. The death of the four still-born can be readily accounted for. In one case, the patient, a stout country woman, had had the infant torn away piecemeal on three different occasions, by experienced practitioners. After having had a living child* under the author's care, by the induction of premature la-

* This individual the author saw as a stout young woman in the twentieth year of her age.

bour, she again came to Edinburgh for the purpose of being confined. Unfortunately she had mistaken the term of her pregnancy by one complete month. After the labour pains had continued with great violence for some hours, without advancing the infant beyond the brim of the pelvis, it became necessary to open its head. Both the utility and the safety, however, of this operation were strongly illustrated by this untoward occurrence. On the three former occasions, where this poor woman had had to submit to the operation of embryotomy, many weeks elapsed before she could even be taken out of bed, but her recovery was so rapid, under the author's care, evidently from the infant having been under the ordinary size, that she was enabled to return home in the course of a fortnight.

This patient again came to Edinburgh, for the purpose of having premature labour induced. From some mismanagement on the part of the attendants, the author was not sent for till the breech of the infant was actually protruded, and the pulsation in the cord had ceas-

ed. The other two cases of still-born infants were also breech presentations.

In the practice of Mr Moir and Dr John Moir,* premature labour was induced twelve times on six women. Nine of the infants were born alive, and the cause of death of the three still-born infants could not be attributed to the operation. In two cases, the size of the infant proved that the woman had been between eight and nine months pregnant, and in one the breech was protruded for above a quarter of an hour before Dr Moir's assistance was procured.

From the above statement, it is evident that, of seventy-seven cases of premature labour artificially induced by the previous rupture of the membranes, thirty-three infants were born alive, and that of fifty-seven infants brought forward in the same way, the membranes having been preserved entire, fifty were born alive. By the

* Surgeon and assistant physician to the Edinburgh General Lying-in Hospital.

one practice, less than one-half was saved, while by the other more than seven-eighths were born alive. Thus, the objections urged by foreign practitioners against this practice, are contradicted by reason and by experience.

With great confidence, therefore, the author can recommend this practice, in all cases where the deficiency of space, in the apertures of the pelvis, does not fall under two inches and a-half.

Considering the facility and the safety with which the operation may be performed, where the apertures of the pelvis are not very much contracted, the author has, within the last few years, considered that it might be proper to advise this operation in some cases where there is no actual deficiency of space, an opinion which, to many practitioners, may at first appear rather paradoxical.

It is well known that in some individuals, the infant in utero is apt to acquire an extraor-

dinary size. Thus, although the usual weight of a well formed male infant at the full period is ascertained to be seven pounds advoirdupois, the author brought one infant into the world weighing fifteen pounds, and another fourteen pounds and a-half; and in the practice of the Edinburgh General Lying-in Hospital, cases every now and then occur of infants weighing from ten to thirteen pounds.

The long circumference of the head of an infant of the ordinary size, viz., a line drawn from the chin to the vertex, passing along the parietal protuberances, is found to be from thirteen to fifteen inches, but that of an infant born in the Edinburgh General Lying-in Hospital, of whom the weight was eleven pounds and a half, was ascertained to be seventeen inches. It must be perfectly obvious that an infant weighing above ten pounds cannot pass easily through the ordinary apertures, and therefore, where experience has shewn in any individual that the infant is apt to attain an unusual size, the induction of premature labour about the eighth

month, would greatly lessen the sufferings of the parent, and would secure the safety of the infant.

Within these few months, the author's opinion upon this subject has been fully confirmed by a case which he has attended. The patient, though a very healthy well formed young person, not more than 22 years of age, had so severe a time in her first delivery, in consequence of the great size of the infant, that it became necessary to employ the forceps. In her second pregnancy, great attention was paid to the regulation of her diet, but the infant proved so large, though the delivery happened within two days of her reckoning, that it became again necessary to employ the forceps, the first time the author has ever had occasion to have recourse to such an expedient twice in the same individual. The long circumference of the infant's head in that case was seventeen inches.

It would be uncandid if the author were to conceal from the junior part of the profession,

that the induction of premature labour, in cases of deficiency of space, and even of dreaded increased growth of the infant, involves such a degree of responsibility, that it should scarcely ever be undertaken by any other than experienced practitioners, and those, too, residents in a great town, for such cases require unremitting attention and watching. No other than one who has had the charge of patients under such circumstances, can understand the anxiety which they occasion. The author has repeatedly had the dread of the uterus bursting impressed upon his mind, and he believes that nothing but steady counter pressure upon the os uteri, from the moment of the rupture of the membranes till the head passed the resisting points, could have prevented that accident in several cases which have been made under his charge. Dr Ramsbotham has recorded a melancholy instance (page 388, Part i.), of this consequence of the induction of premature labour.

Dr Merriman's observations, (Synopsis, third

edition, page 172, *et seq.*), on the cautions to be observed in the induction of premature labour, deserve the attentive consideration of every practitioner. On some minor points, indeed, the author entertains a different opinion from that of his respected friend. In particular, he must consider the dread of preternatural labours occurring frequently in such cases to be ill-founded, for out of fifty-seven cases under the author's care, and that of the medical attendants of the Edinburgh General Lying-in Hospital, there were only five such, and of those four were breech presentations. In the other case, the shoulder presented, and when this was discovered, the membranes being still entire, the infant was extracted alive within less than ten minutes.

Even admitting that, in the ordinary course of practice, there should occur seventeen cases of preternatural presentations, in seventy-eight cases of premature labour,* that would, in the

* Medico Chirurgical Transactions, vol. iii. p. 137.

author's opinion, be an argument in favour of the induction of premature labour, for nobody can doubt that it is easier to turn an infant weighing six pounds than one whose weight is seven pounds. Dr Merriman seems to suppose, that if an upper extremity present, the position of the infant may be spontaneously altered in the course of a few days, but this is quite at variance with the author's experience.

ON PRETERNATURAL LABOURS.

By preternatural labour is meant every case where any other part of the infant than the head is forced foremost, and it is now ascertained, that from two to three such cases occur in every hundred labours.

The usual arrangement of preternatural labours into two orders, viz., presentations of the lower, and presentations of the superior extremities is founded on the fact, that in the former cases the natural contractions of the uterus may safely complete the delivery, whereas, in the latter, such an event is more to be wished for than expected.

On the means by which preternatural labours can be distinguished, the author has no new observation to make, it being sufficient to remark, that no man can practise with safety who cannot readily distinguish those cases at an

early period of the labour, or at least before the rupture of the membrane.

For the appropriate treatment of preternatural labours, the first object is to determine in what manner the infant can be adapted to the passages with the greatest facility to the parent, and with the most probable safety to its life. When the author began practice, he was taught that, with those views, the fore part of the foetus should be turned to the back of the mother, and minute directions were given for accomplishing this object.

In the year 1788, a case occurred in the lying-in ward of the Royal Infirmary, where the breech presented, and where the delivery, though the infant was of a large size, proved so easy and expeditious, that the author's attention was particularly directed to it. He found that the belly, the breast and the face (of the infant) passed successively along the sacro iliac synchondrosis of one side, and that when the chin came in contact with the coccygæi

muscles, and sacro sciatic ligaments, the face turned into the hollow of the sacrum. On considering the subject, he saw at once that in this direction, the infant occupies the least possible space, and, of course, passes with the greatest safety and facility, and from that time, he has invariably practised, as well as taught, that in the management of every case of preternatural labour, the infant should, in the progress of its extraction, be brought in that direction.

Accordingly, in his *Select Cases of Midwifery*, published in 1795, page 89, he said, "In every case where the feet are brought down, the toes should, in the progress of extraction, be turned into such a position, that the belly, the breast and the face, shall be made to pass in succession along the nearer sacro iliac synchondrosis. After the arms are disengaged, the face can be readily turned into the hollow of the sacrum."*

* His belief at the time was, that this discovery of the most favourable position in which the infant might be

It is not surprising that Dr Denman, whose works seem still to continue to guide English practitioners, should not have duly appreciated this deviation from the old practice, because he had retired from the mechanical department of the profession before these observations were published. He says, (in his second volume, page 221, published in 1801),—"The directions given on this occasion are, that we should make the turn beyond the mere reduction of the back of the child to the pubes, and then revert it to a certain degree, by what may be supposed equivalent to a quarter turn. But such rules being very complex, are more apt to create confusion than to be of use, and are not founded on practical observation, but on an erroneous

brought forward in preternatural labours was original, and he regarded it as of great importance, because, at the period alluded to, the calculation was, that one half of all the infants brought forward prematurely were lost in the birth.

When Heath's translation of Baudelocque's work appeared in 1790, the author was surprised to find that Monsr. Baudelocque had explained the mechanism of those cases very accurately in the year 1780. That first edition of his work was little if at all known in Britain.

opinion that the head of the child could be extracted only, or most commodiously, when the face of the child was turned toward the os sacrum of the mother. Whereas, it is now well known that the head of the child will pass through the pelvis, with one ear to the pubes and the other to the sacrum, or in different degrees of diagonal direction regarding the cavity, and that it is not found to proceed exactly alike in any two labours."

Even Professor Davis seems to have concurred in these observations of Dr Denman, disregarding not only the doctrines of Baudelocque and Gardien (including those of the author, published in 1795), but also the testimony of Madame la Chapelle respecting the cases of preternatural labours which occurred in the *Maison d'accouchemens* of Paris, between 1812 and 1820.* At least, this is the

* She states (vol. ii. page 24), that of 1390 preternatural labours of the first order, in 756 the back of the infant was directed towards the left side of the mother, in 494 to the right side, in 13 to the pubes, and in 26 to the sacrum.

inference which the following quotations from his late publication naturally suggest. He says (page 1001),—"From what has been already stated, it must appear quite obvious, that the required change of position should consist in placing the child's head in such a situation as shall cause the face to be determined to the back of the mother, before it shall commence its descent into the cavity of the pelvis." And in a subsequent part of the same page, he adds,—“With this power, and at the time stated, he accordingly forthwith proceeds to effect the required movement of the body of the child, so that its face and front surface generally shall be determined towards either of the sacro iliac junctions, or back of the mother.”

In Bandelocque's fourth edition, published in 1807, there is a table, containing an account of the cases which occurred in the Hospice de la Maternité of Paris, from the 10th December 1797 to the 31st July 1806. In that table it is stated, that out of 348 cases of preternatural labour of the first order, the feet were naturally towards the right side of the pelvis in 204 cases, to the left side in 129, to the sacrum and to the pubes in each respectively in seven cases.

Dr Collins, in his late publication, sanctions this practice. In reference to the opinion of Dr Denman and others, he observes (page 41), “as soon, therefore, say they, as these parts are expelled, if the back of the child be not towards the mother’s abdomen, the practitioner should, in extracting, turn the child, so that the hind part of its head may be towards the pubes.” He adds the following doubtful expressions:—“It is very desirable the child should be delivered in this position, as it renders the getting away of the head much less difficult, yet where there has been no interference by the attendant in the previous part of the labour, he will rarely find it necessary to alter subsequently the child’s position, the breech naturally making the turn above alluded to, in its progress.”

From the recorded cases of the first order of preternatural labours, published within these few years, the author is led to infer, that Dr Denman’s opinion respecting the adaptation of the head of the infant to the passages, con-

tinues to mislead English practitioners. His allegation, that “ the head of the child can be extracted without disengaging the arms,” may lead to much mischief. If the infant, from immaturity, be under the ordinary size, it is so easy to bring down the arms, that it is not worth while dispensing with the rule, and if the infant be of the ordinary size at the full time, it will be found to be impossible to draw forward the head with safety, without relieving the arms.

But perhaps Dr Denman’s allegation, that the head of the infant may be extracted though the ears be to the pubes and sacrum, is the most objectionable part of his doctrine. Many cases have fallen under the author’s notice where violent efforts had been for hours exerted in vain to extract the head in that way, and where, of course, the infant was lost, and the mother’s life brought into jeopardy. In many such cases, the practitioners in previous attendance were surprised to find that the delivery was completed in a few minutes, with-

out any exertion of force, it being only necessary to turn the face into the hollow of the sacrum.

Young practitioners are never to forget, that in every case when the infant is born as far as the head, the disengagement of that part cannot be accomplished with facility or safety, unless the chin be brought in contact with the point of the coccyx.

Having established the general principle upon which all cases comprehended under the first order of preternatural labours should be conducted, a brief notice only of the individual cases will suffice.

FOOTLING CASES. It sometimes happens that while the patient is out of bed, the membranes suddenly give way, the liquor amnii is discharged, and the feet of the infant are protruded. These circumstances are apt to excite such alarm as to suspend the uterine contractions, and if the practice recommended by Dr Col-

lins, to “ avoid all interference until the hips (haunches) shall have been completely expelled,” be adopted, the infant would probably be lost.

Instead of not interfering, the infant's limbs should be wrapped up in a soft warm cloth, and gently drawn forward, shifting hold according to their advance, till the knees are protruded, when the belly is to be turned towards the nearer sacro iliac synchondrosis,—the navel string to be slackened,—the arms to be disengaged,—(employing two fingers for that purpose),—the face to be turned into the hollow of the sacrum, and the head to be drawn forward by bending the chin up towards the pubes. If the patient have formerly had a child, this operation should scarcely occupy five minutes. Even in a first labour it should not require much more time, for experience proves that the passages yield readily to pressure from within.

BREECH PRESENTATIONS. These are certainly the most frequent cases of preternatural labour,

there being at least two such cases in every hundred labours.

Where the patient has formerly had a child, —where the infant is of the usual size,—and where the passages are of the ordinary dimensions, the management of those cases is abundantly simple, no interference being necessary (unless the membranes have given way at the very commencement of labour) until the perinæal tumour be formed, when the same support is to be given as in natural labour. One buttock of the infant is, in the usual progress, pressed into the orificium vaginæ, and in supporting the parts, is to be pressed up towards the pubes. When the whole breech is protruded, the navel string is to be slackened, and wrapping the protruded parts in a soft warm cloth, the belly is to be inclined (if not naturally so) to the nearer sacro iliac synchondrosis, and, when the feet drop out, the further procedure is to be the same as in footling cases.

If the liquor amnii be discharged at the com-

mencement of labour, the edges of the os uteri, whenever the infant comes into strong contact with them, must be carefully supported by means of two fingers during every pain, till the breech passes through them. By this simple method, the dilatation of the uterus is promoted,—the sufferings of the patient alleviated,—and the impaction of the infant prevented. If it be the patient's first child, copious bleeding, wherever the circumstances will permit, will contribute greatly to the facility of the delivery, and to the safety of the infant.

Occasionally it happens that the breech does not enter the pelvis, notwithstanding regular pains, and the dilatation of the uterus being completed within the proper time. This may be occasioned either by the too large size or the malposition of the infant, or by deficiency of space at the brim of the pelvis.

In either case, the appropriate practice is to administer a full opiate (that is, from sixty to eighty minims of tinctura opii), and in from

twenty to thirty minutes to pass up the right hand, during an interval between the pains, and by gently pushing up the breech, to bring down one of the feet, thus making it a half footling, half breech case. It will be found, that by accommodating the infant to the apertures, even where there is a deficiency of space, it may be extracted without mutilation. The author can prove, that on several occasions he extracted, with safety to the patient, a full grown infant entire, in presence of competent witnesses, where the distance between the pubes and the sacrum did not exceed two inches and a-half.

Certainly the most troublesome breech cases which occur in practice, are those where the doubled infant is firmly wedged in the passages with ineffectual uterine contractions. For the management of such cases, the methods commonly recommended are, hooking a finger in the groin,—passing a garter or ribband over one of the lower extremities, and applying a blunt hook.

Where the impaction is trifling, either of the two former methods will prove efficacious, and accordingly of two hundred and forty-two breech cases which occurred in the Dublin Lying-in Hospital during Dr Collins's incumbency as master (viz., seven years), there was only one case where the use of instruments became necessary. In the practice of the author for the last forty years, he has had no occasion to use any mechanical means in such cases, where he has had the charge of the patient from the beginning of labour.

Every practitioner in extensive practice must acknowledge, that cases now and then do occur where neither the fingers nor a ligature can be of any avail in advancing the infant, of which Dr Ramsbotham has recorded several interesting instances.* And even Dr Collins, although he "strongly deprecates the use of the blunt hook and forceps" (page 43), records (page 47),

* *Vide* vol. ii. page 28, *et seq.*

that in one case he was obliged to have recourse to the blunt hook.

Admitting, then, the necessity for applying mechanical assistance in some cases of breech presentation, the question to be decided is, whether the blunt hook or the forceps be the appropriate instrument ; and the selection, in the author's opinion, is abundantly obvious.

If a sufficient degree of force be applied, the accomplishment of the delivery may be effected by means of the blunt hook, but not with safety to the infant, for by this instrument the advancing part cannot be lessened in bulk, nor can its position be altered. The author, therefore, cordially concurs with Dr Collins in his reprobation of the blunt hook in such cases.

Dr Collins has, to the author's surprise, included in his anathema, an interdict of the use of the forceps as well as of the crotchet. He says (page 44), that "such practice is very likely to be followed by fracture of the thigh bone,

or at least considerable injury of the soft parts.” That the blunt hook may have such effects is willingly conceded, but that the application of the forceps, if skilfully employed, could either fracture the thigh bone of the infant, or injure the parts of the mother, is quite inconsistent with the experience of the author.

By applying the forceps over the breech of the infant, so that the convex edge shall be towards its belly, the practitioner can lessen the presenting part, without any possible injury to the thigh bones, and can, at the same time, turn round the infant in such a manner as to bring its largest part through the widest part of the aperture, thus overcoming the resistance, and securing effectually the safety both of the infant and of the mother.

The author can truly add, that he has never met with any case of preternatural labour of the first order, where, after having brought the infant's person through the external parts, it became necessary to lessen the head, having found

it always practicable, as already stated, to bring the head through an aperture permitting the expulsion of the body.*

Preternatural labours of the second order are most dangerous and embarrassing. The author regrets to be compelled to object to certain modes of treatment lately recommended and adopted in such cases by practitioners of established and deserved eminence.

Pierre Franco and Ambrose Parry suggested, in the 16th century, that where the infant is discovered to be in any of the positions constituting the second order of preternatural labours, its feet are to be brought down in preference

* He admits that he has been called in to a few cases, where, from the mismanagement of the practitioners in previous attendance, the head of the infant was so strongly wedged in the pelvis, that he found it impossible to accommodate it without the risk of great injury to the mother. As in those cases the life of the infant was already extinct (unequivocally proved by the state of the navel string), he deemed it his duty to lessen the head by perforating the occiput, which he effected without difficulty.

to the head, because the delivery can in this way be completed without uterine contractions. When the membranes of the ovum remain entire, this operation may be safely and easily effected, if the os uteri be sufficiently dilated.

Many years ago the author discovered, that under such circumstances, the operation, when necessary, may be accomplished without carrying the hand into the uterus, a method which he believes has not yet been recommended in any professional work. This method is particularly explained in the article on uterine hæmorrhagy.

When the membranes have burst before the nature of the case is understood (the arm or shoulder, &c., of the infant being the presenting part), it is well known that the operation of turning is both difficult and dangerous. An accidental discovery of Dr Denman, published in 1785, was, therefore, hailed with great delight by all practitioners who felt reluctant to give pain to their patients, or to incur the re-

sponsibility of a difficult and dangerous operation. Dr Denman discovered, that in some cases of cross births, the uterine contractions gradually force aside the original presenting part, and protrude the breech. This he called the spontaneous evolution of the foetus. But during his own lifetime even, many individuals in public hospitals, as well as in private practice, sunk undelivered, while the practitioner was expecting this effort of nature.

Above forty years have elapsed since the author ventured to raise his warning voice against practitioners being misled by the opinions of Dr Denman on this subject. His observations, published in 1795 (in *Select Cases of Midwifery*, page 111), were the following,—

“ The spontaneous evolution, as Dr Denman has called it, can only take place where the child lies in a particular situation, viz., where the action of the uterus cannot be exerted on the presenting part, or where that part is so shaped that it cannot be wedged within

the pelvis. A practitioner may, therefore, by a careful examination, be able to decide whether the evolution will happen or not. This observation is by no means a matter of speculation, being, on the contrary, of much practical utility ; for, if there be signs which indicate the event alluded to, it follows, as a consequence, not only that the natural process is not to be counteracted, but also, that it is to be assisted. Two cases occurred during one year, where the author of these remarks had an opportunity of prognosticating and assisting the evolution, in presence of two gentlemen then attending the professor of midwifery, as annual pupils."

He has met with no case whatever since that time, which could induce him to alter his opinion, and, in point of fact, the observations published by Dr Kelly and Dr Douglas of Dublin, furnish a complete confirmation of the above remarks, although their explanation of the mechanism of the spontaneous evolution is neither so simple nor so intelligible.

Within these few years attempts have been made by Monsr. Flammant of Strasburgh, and other foreign practitioners, to restore the old practice (of bringing down the head instead of the feet), which they dignify with the title of the hippocratic method.

That, on some rare occasions, it may be useful or proper in such cases to make the head the presenting part, the author admits, but these are exceptions, to the general rule, which very rarely occur. Thus, in a few cases to which he has been called, on its being discovered immediately after the rupture of the membranes, that the shoulder was the presenting part, he has succeeded in reducing the shoulder, and assisting forward the head. In those cases, the patients had had a family, and the uterine contractions were remarkably vigorous.

Under another combination of circumstances, he, on one occasion, adopted the same practice. The patient was the mother of a family, and

had been above three days in labour, but the intelligent practitioners who attended her, viz., Dr Barnes and Mr Anderson of Carlisle, could not feel the os uteri, in consequence of an excrescence which nearly filled up the cavity of the pelvis. The author (who was recognized by those old pupils while accidentally passing through Carlisle) ascertained that it was a shoulder presentation, and on making an attempt to turn, having found, from the flaccid state of the navel string, that the infant was dead, he gently pushed back the shoulder, brought the head down on the brim of the pelvis, and left the gentlemen to lessen it in the usual manner.*

As he does not believe that Monsr. Flammant's hippocratic method will ever be adopted by British practitioners, he holds it to be unnecessary to make any further remarks on the subject.

* This poor woman recovered from delivery, but afterwards died from autumnal cholera, which at that time prevailed extensively and fatally in Carlisle.

But with respect to a practice lately adopted in London and Dublin, in the cases under consideration, he feels it to be his imperative duty to express his disapprobation. The practice to which he alludes, is exviscerating the foetus, that is, extracting the contents of the thorax and abdomen.

Dr Ramsbotham (vol. ii., page 56), thus describes the operation :—" Perforation of the chest offers the safest and most effectual mode of delivery, when the chest and ribs are situated in, or at the brim of the pelvis, immediately opposed to the examining finger ; or when a considerable portion of these parts are pushed into, and are firmly impacted within the upper part of the cavity ; the neck being out of reach. A large perforator, with a cutting edge on its outer surface, well guarded by the hand, must be introduced between the ribs, and an opening made sufficiently large to admit the introduction of the hand ; through this opening the contents of the chest, and those of the abdomen must be gradually withdrawn. This un-

pleasant operation necessarily occupies a considerable space of time ; it allows the trunk at length to bend upon itself, and to collapse into a smaller compass."

Dr Collins says, in allusion to this practice,—
“ We have performed this operation repeatedly, without the slightest injury to the patient, except in one instance, where the pelvis measured but two and a-half inches from pubes to sacrum ; nor, do we think, where common caution is used, that there is, comparatively speaking, any risk to the patient. Delivery, in this way, is very troublesome ; in most instances requiring an hour and a-half, or two hours for its completion. A free opening must be made, with the ordinary perforator, into the thorax, so as to permit us completely to empty it of its contents ; we next open through the diaphragm, and remove the abdominal viscera, in order, as much as in our power, to diminish the bulk of the body ; for this purpose, the crotchet and fingers are to be used ; we then fasten the crotchet on the pelvis of the child, and giving

gentle assistance with each pain, where the woman is well formed, the breech, by a little perseverance, will be got down and the delivery accomplished. Where we find much resistance, and there is no very urgent symptom rendering speedy delivery necessary, by withholding further interference for some hours, the body becomes softened and collapsed, and is then more easily removed; in some instances the child is expelled doubled by the action of the womb."

The account which Dr Ramsbotham gives of the cases (vol. ii., page 76, *et seq.*), where he had recourse to this practice, confirms Dr Collins's statement of the difficulty of the operation, and of the length of time required to perform it.

That the cases where Dr Ramsbotham and Dr Collins had recourse to this practice, are too few to establish the safety of this method, must be obvious to every medical man, and the author can truly state, that in the course of his

practice (now extending to nearly half a century), he has met with only one case of preternatural labour of the second order, where, from the previous mismanagement of the patient, and from her being apparently in a dying state, he feared that he could not accomplish the operation of turning, and yet he eventually succeeded.*

His decided impression is, that, generally speaking, the circumstances which have rendered the operation of turning (after the rupture

* This case is recorded, page 104 of *Select Cases in Midwifery*, published in 1795. This patient, the mother of eleven children, had been five days and nights in labour before the author was called in. On examination, the right arm and the umbilical cord of the infant, which had evidently been dead for some time, were found in the passage; and although the poor woman was greatly exhausted, the uterus was so strongly contracted, that it appeared impracticable to pass, with safety, the hand beyond the shoulder.

In consequence of an unsuccessful attempt to open the thorax, three of the cervical vertebræ were separated and extracted, by which means the head of the infant was made to recede, the feet were brought down, and the infant was extracted without actual decapitation. The poor woman did not survive thirty hours.

of the membranes) difficult, and apparently impracticable, are to be attributed to mismanagement. If a large opiate be not exhibited previous to attempting the operation, the uterine contractions in some cases cannot be overcome by ordinary and safe exertions. It may be unnecessary to advert to the timidity or embarrassment of the practitioner. He repeats, that although he has been called in to many cases, in which an unsuccessful attempt had been made to deliver, he has never yet, since the case that occurred in August 1794, already referred to, had any difficulty in bringing down the feet of the infant, a fact quite notorious in this city. He believes that exviscerating the infant can very seldom, if ever, be necessary.

ON UTERINE HÆMORRHAGY OCCURRING
DURING THE TWO LATTER MONTHS
OF PREGNANCY.

OF the untoward accidents to which pregnant women are occasionally liable, one of the most alarming certainly is, a discharge of blood from the womb after the completion of seven calendar months, and although several eminent practitioners, both foreign and domestic, have discussed at full length the management of such cases, it appears to the author that the appropriate means of relief have not yet been satisfactorily explained.

Discharges of blood from the womb during the two latter months may occur previous to the commencement of labour, or during its progress, or even after its completion. It is necessary, therefore, to consider this untoward symptom under those different circumstances.

SECTION I.—DISCHARGES BEFORE THE COMMENCEMENT OF LABOUR.

SLIGHT discharges, called by the nurses shews, may happen at any time after the completion of the seventh month, and may be readily arrested by quiet, and the other ordinary precautions which women adopt in such cases. But occasionally, there is a sudden profuse discharge of fluid blood, or of large coagula producing certain injurious influences upon the general system, without any tendency to uterine contraction.

The effects of the loss of blood in the latter months, and previous to the occurrence of labour, have not been so minutely detailed by systematic writers, as to render them familiar to young practitioners, but in the cases recorded by Dr Smellie, by Mr Perfect, and by Dr Ramsbotham, reference to which is made

in the foot note,* there is a most graphic description of the progressive symptoms of this most alarming occurrence.

For many years after the author began practice, he witnessed, in the cases which ended fatally, the following symptoms, in various combinations, viz., pallidness of the countenance—langour and faintness—sickness and slight retching—feebleness of the pulse—singing of the ears—sensation of swimming of the head, with impaired vision—oppression at the precordia—coldness of the limbs—cold clammy exudation on the surface—the pulse imperceptible at the wrists—low muttering delirium—excessive restlessness, with gasping for breath, and convulsions or moaning, with very imperfect or laboured breathing. He believes, that for the first twenty years he did not see any patient die from hæmorrhagy, in whom delirium, or

* Smellie, vol. iii., page 110, 118, 128, 138 and 297.

Perfect, vol. i., page 139 and 235, and vol. ii. page 354.

Ramsbotham, vol. ii., page 197, 200, 202, 206, 210, 213, 216, 220 and 225.

convulsions, or laborious breathing, with distressed groaning, did not precede the fatal event.

But he has now met with many exceptions to what he still considers the general rule. It has been his misfortune to witness several cases where the individuals swallowed, spoke with a firm tone of voice, and had a perceptible pulse at the wrists within two minutes previous to death, having neither had delirium, nor oppressed breathing, nor convulsions.

Uterine hæmorrhagy, during the latter two months of pregnancy, must be occasioned either by the rupture of some of the blood vessels running into the decidua, or by a separation of a portion of the placenta from the surface of the uterus. Slight discharges proceed from the former cause, and the more serious ones from the latter.

It cannot be doubted, that in particular states of the system, passions of the mind—mechani-

cal injuries—bodily fatigue, and local irritation from certain indulgences, may occasion a rupture of the vessels transmitted to the decidua in the vicinity of the os uteri, and thus produce those temporary slight discharges of blood which are occasionally met with.

When, however, the discharge is profuse, it is now well understood, that it is occasioned by the separation of a portion of the placenta. While this fact is admitted by the profession at large, it may, perhaps, seem wonderful, that the effect of this separation is not yet properly understood, at least, as far as published authorities evince, the common belief being, that the blood discharged in consequence of the separation alluded to, issues from the uterine vessels which had been thereby ruptured.

As it appears to the author that the practice, in those very interesting cases, is to be founded upon the knowledge of the true source of the discharge, he feels it incumbent upon him, although he is most reluctant to dissent from

respectable authorities, to advert particularly to the opinion so universally, and, to him, so inexplicably prevalent upon this subject.

Dr Ramsbotham says (page 172), “ When the placenta is implanted over, or is attached very near to, the mouth of the womb, an attack of flooding must take place upon the commencement of the relaxant process in the cervix uteri, preparatory to labour. That occurrence is a necessary consequence of some separation of the placenta from its original attachment. In explanation of this positive assertion, I must beg to remark, that for six or seven months after conception, the uterine structure has been more particularly developed in its fundus and body ; and that about that period, the cervix uteri becomes shorter and thinner. While these changes are going on, the placental attachment is so much disturbed, that some of the uterine vessels passing into the placental cells are separated ; the immediate consequence of which is a discharge of blood

in greater or less quantity, according to the degree of detachment.”

“ The nearer the completion of the ninth month an attack of flooding takes place, the more rapid and dangerous does it usually prove ; for, at that time, the uterine vessels, passing into the placental cells, have acquired their greatest degree of magnitude ; by any separation of the attachment, therefore, their contents are discharged with increased velocity.”

And again, (in page 115), he has the following observations :—“ A natural cessation of the hæmorrhagy is probably brought about, partly by a degree of uterine contraction silently exerted, and partly by the formation of a plug at the extremities of the bleeding vessels. I cannot suppose it possible, that the separated portion of the placenta can be again attached to the uterus with such a degree of precision, as to be restored to the performance of its original functions. That portion may, perhaps, become adherent to the surface whence it was detach-

ed by an effusion of lymph ; but its cells must, for the future, remain impermeable to the mother's blood, the foetus will therefore be deprived of some placental influence, and occasionally to that extent as to terminate its existence." In several other passages of Dr Ramsbotham's work, the same opinion is repeated.— (*Vide* p. 112, p. 121.)

On this subject, the following expressions of Professor Davis lead the author to believe that he agrees with Dr Ramsbotham, that the hæmorrhage proceeds from the vessels of the uterus, which had been burst by the separation of the placenta.—(Page 1052),—

“ When the discharge has been rapid and sudden, as well as profuse, in the first instance, he has concluded, as he thinks reasonably, that it must have had an extensive separation of the uterus from the placenta for its source. It is obvious, that the same extent of now become unprotected uterine surface, might furnish a source, at any future period of the pregnancy, of

a hæmorrhage at least of equal magnitude, which the patient might not certainly survive. This fact, then, furnishes a principle which perhaps, in most cases, should be allowed to direct our practice. The same source continuing to be exposed, it should be a matter of anxious inquiry, how far it were probable that a patient, already enfeebled by a first flooding, might be able to bear with impunity, and certainly survive a hæmorrhagy of the same amount again."

Dr Dewees, in his sixth edition, dated 1833, certainly has adopted the same opinion ; for he says, in reference to the distinction between unavoidable and accidental hæmorrhagy (page 381), " From the proximity of the blood vessels to the os externum, the blood will issue so quickly from them as to appear both more fluid and more florid than in the accidental species, for, in the accidental, the blood may escape remotely from the os uteri, and be obliged to travel slowly through the meshes of the connecting medium of the ovum and uterus, and hence will appear less florid and fluid, and be

more disposed to coagulate than in the unavoidable."

Again, he says (page 384), in further elucidation of his views, in allusion to the use of the plug (a practice to be specially noticed by and by), " But the most important use of the tampon, under those circumstances, remains to be mentioned, which is, that it causes the coagulation of the blood, merely by presenting a surface favourable to this change, long before this disposition would spontaneously shew itself."

Mr Ingleby says (page 134), " The effusion proceeds from the large vessels in connection with the placenta, on the one hand, and the vessels in connection with the decidua and membranes on the other."

Many other authorities might be quoted to prove the common opinion upon this subject, and yet the author, from the earliest period of his professional life, has been anxious to shew

that the hæmorrhagy in those cases proceeds more from the separated portion of the placenta than from the ruptured uterine vessels, and he considers that, on this subject, there can be no doubt in any reflecting mind.

As there is a free communication throughout the whole cellular texture of the placenta, the blood conveyed by the uterine arteries into any part of it is necessarily diffused over the whole mass, and hence, if any part be detached, blood must be discharged from the separated portion.*

Although the anatomical structure of the placenta renders this proposition a fair inference, it is most satisfactory that practical observations establish it beyond the possibility of controversy.

* This structure of the placenta has been called in question by Dr Lee, in a late publication, sanctioned by the high authority of the Royal Society of London, but the observations of Dr Ley of London, and of Dr Burns of Glasgow, have triumphantly established the accuracy of the Hunterian explanation of the structure of that part of the ovum.

Thus, Dr Denman has remarked (vol. ii., page 297 ;)—" This hæmorrhagy is often, but not always, in proportion to the space of the placenta attached over the os uteri, or to the quantity separated, for women have sometimes been in as great danger when the mere edge of the placenta was fixed upon the os uteri, as if the middle had been placed over it." Dr Collins bears testimony to the same fact. He says, (page 91), " I have seen the hæmorrhagy as profuse when there was merely a portion of its edge detached, as where the great bulk was separated."

Secondly, Dr Smellie has related the history of three cases where the placenta was extracted before the infant, and where the hæmorrhagy, which had occurred at the commencement of labour, had ceased the moment the placenta was taken off. Dr Ramsbotham has referred to six cases of the same kind, and Dr Collins (page 102) has mentioned two similar cases. In one of these, the separation of the placenta had taken place on the evening

before the patient was admitted into the Dublin Lying-in Hospital, and in the other the placenta was found in the vagina, on her admission into that hospital. In both cases, Dr Collins expressly mentions, that hæmorrhagy had preceded the separation of the placenta, and had ceased on that event taking place. The author has seen two cases of the same nature.

It is obvious, that if uterine hæmorrhagy, before delivery, were occasioned only, or chiefly, by the rupture of the uterine arteries which had run into the placenta, the patients, under the circumstances above narrated, must have rapidly sunk. Indeed, the only possible explanation of the hæmorrhagy having ceased in those cases, after the total separation of the placenta is, that the uterine vessels ruptured in consequence, had been retracted within the substance of that organ. But, at any rate, it cannot be controverted, that the cessation of the hæmorrhagy, after the complete separation of the placenta, while the rest of the ovum still distended the uterus, affords the strongest pos-

sible evidence, that the flow of blood, which it is well known continues, while there is only a partial separation, proceeds from the detached portion of the after birth, as well as from the uterine vessels.

Thirdly, In several cases which have fallen under his observation, where the author was called too late to afford proper assistance, it was found that the fatal hæmorrhagy had proceeded from the separation of a very small portion of the placenta. In one distressing case, a few years ago, where his friend Mr Barker and he witnessed the appearances in a woman, who had died undelivered from hæmorrhagy between the seventh and eighth month, it was found that the area of the separated portion of the placenta was less than a square inch.

This error, in respect to the source of the hæmorrhagy, has led to a still more extraordinary and more important one, in relation to the means by which the natural resources of the constitution stop the progress of such discharges.

According to all the latest authorities, it appears that the general belief of the profession is, that hæmorrhagy, occurring before the birth of the infant, may be checked, by diminished action of the heart and arteries favouring coagulation in the extremities of the ruptured vessels. Dr Ramsbotham expressly says (page 115),—"A natural cessation of the hæmorrhage is probably brought about partly by a degree of uterine contraction, silently exerted, and partly by the formation of a plug at the extremities of the bleeding vessels."

Dr Dewees, in his arguments for blood-letting in those cases, has the following remarks, (page 383) "that at this period, the hæmorrhagy is, for the most part, owing to a mechanical separation of a portion of the placenta, but which will not generally be renewed for some time, as the separated vessels and the other connecting media possess considerable elasticity, therefore time will be given for the formation of coagula, provided the proper means be pursued to favour their production."

Mr Ingleby says (page 69), “ The other means of restraining hæmorrhagy, namely, the formation of coagula and slight contraction of the vessels, are subordinate to muscular contraction. The coagula sometimes extend a considerable distance within the tubes.”

By what prejudice this notion has been so generally adopted the author cannot understand. No anatomist has yet ventured to allege that he has seen coagula plugging up the extremities of the ruptured vessels in the gravid uterus. In point of fact, their structure renders it impossible. The author has in his collection, three preparations of the uterus taken from subjects where hæmorrhagy had proved fatal at periods after delivery, varying from a few hours to three weeks, and where the hæmorrhagy had ceased for some time before death, but there was not the slightest appearance of coagula in the extremities of the vessels.

That hæmorrhagy, in the latter months of pregnancy, whether accidental or unavoidable,

is occasionally suspended by the natural powers of the constitution, is indisputable, but neither the phenomena during life, nor the appearances after death, shew that this is accomplished by the coagulation of the blood in the extremities of the ruptured vessels.

When a portion of the placenta in the latter months of pregnancy is separated, either accidentally or unavoidably, if the hæmorrhagy cease, it will be found that the uterine vessels thus ruptured, are drawn into the substance of that organ, and constricted, to which their peculiar structure admirably adapts them,* and

* “The arteries of the uterus which are not immediately employed in conveying nourishment to it, go on towards the placenta, and proceeding obliquely between it and the uterus, pass through the decidua without ramifying; just before they enter the placenta, making two or three close spiral turns upon themselves, they open at once into its spongy substance without any diminution of size, and without passing beyond the surface, as above described. The intention of these spiral turns would appear to be that of diminishing the force of the circulation as it approaches the spongy substance of the placenta, and is a structure which must lessen the quick motion of the blood in a part

that the separated portion of the placenta undergoes a change analogous to that of adhesive inflammation, probably from the influence of the atmospherical air. The recurrence of the hæmorrhagy in such cases, arises from a further separation.

Generally, when any portion of the placenta is separated during the latter months of pregnancy, the consequent discharge of blood is manifest, but sometimes it is retained and accumulated within the uterus, and is necessarily productive of danger, either to the mother or to the infant. Happily, such cases occur rarely, and hence the author has seen only a few of these : the two following were the most remarkable.

A lady, the mother of a family, when past

where a quick motion of fluid is not wanted. The size of these curling arteries at this termination is about that of a crow's quill." Observations on certain parts of the Animal Economy, by John Hunter, (published in 1786,) page 134.

the eighth month of pregnancy, made, in consequence of a sudden fright, a violent effort to escape out of a field in which she was walking. Within less than a fortnight premature labour came on, and she was delivered of a still-born infant, whose cuticle was peeling off. In the central part of the lobulated surface of the placenta, a strong coagulum of blood, the size of an afternoon tea cup (which had completely compressed the part of the placenta with which it was in contact) was discovered. The adhesion of the edges of the placenta had saved the patient.

In the other case, the lady had very nearly approached the full period of her sixth pregnancy, when, about seven o'clock of the morning, she became affected with violent retchings, which continued for some hours, and were eventually followed by feelings of sinking. The author did not see her till two o'clock of the afternoon, and he then found her scarcely capable of articulating, and labouring under great difficulty of breathing. She was just able to

tell him that she felt as if she were going to burst. She had a pallid countenance, a cold clammy exudation upon the surface, pulse at the wrists imperceptible, and a prodigious distension of the abdomen. . There was no discharge from the uterus, and no symptom of labour. Immediate delivery was accomplished by passing the hand into the uterus, and a dead infant was extracted, which was followed by the discharge of an immense quantity of coagulated blood, and the placenta. The patient almost instantly expired.

Mons. Baudelocque has alleged (paragraph 1091), that uterine hæmorrhagy, during the latter months of pregnancy, may be occasioned in some cases by the rupture of the vessels of the navel string of the infant, and he has mentioned the particulars of one case, where he declares that he shewed the ordinary medical attendant of the family, that the umbilical vein of the infant had been ruptured at its root. He adds, that the quantity of blood discharged could have filled two ordinary sized hats, and

that the patient sunk after a protracted illness of forty days.

Admitting the fact of the rupture of the umbilical vein and of the hæmorrhagy, it must be quite obvious to any one who understands the anatomical structure of the gravid uterus, that there must have been some important circumstance in that case which Mons. Baudelocque had overlooked. For, in the *first* place, no more blood could issue from the rupture of that vessel than what had circulated through the vascular system of the fœtus, and that could not possibly have filled one hat. *Secondly*, Not a drop of the mother's blood could be discharged from the umbilical vein of the fœtus; and, *thirdly*, Mons. Baudelocque himself states, that the infant was not only born alive, but survived. As the infant in that case was expelled by the lower extremities, it is evident that the rupture of the cord had occurred in the progress of delivery, and must have happened very shortly before the birth of the child, and that no considerable loss of blood from the navel string

could have taken place, because the infant was born alive.

The separation of any portion of the placenta, previous to the occurrence of labour, may be the effect of accident, or it may be the necessary consequence of its adhering to a part of the cervix uteri. This latter cause was discovered about the middle of last century. It was particularly noticed in the year 1752 by Dr Smellie, who at that time practised and taught midwifery in London with great success. It was afterwards described by Mons. Levret, of Paris, in 1756. But it does not seem to have attracted the attention of British practitioners till the publication of Dr Rigby of Norwich, in 1776, who availed himself of the discoveries both of Dr Smellie and of Mons. Levret, while he contrived to make the profession believe that his doctrines were original.

Dr Rigby's distinction of those cases, (*viz.*, into accidental and unavoidable) borrowed without acknowledgment from Levret (page 343)

is perfectly correct, but his inferences have led to very serious errors in practice. His professed belief was, that by ascertaining the cause of the hæmorrhagy, the probable event could be certainly predicted, and the appropriate treatment as certainly decided upon. Had that opinion been true, the practice in those distressing cases must have been greatly simplified, but every member of the profession can bear witness to its inaccuracy.

While it is conceded that the attachment of any portion of the placenta to the cervix uteri is necessarily and unavoidably the cause of great danger, the author can most solemnly assert, not only that accidental separation of the placenta is frequently productive of as much danger, but also that it is apt, under the charge of inexperienced practitioners, to be most improperly treated. He has seen, in the course of his professional life, fully as many cases of fatal event from accidental separation of the placenta, as from attachment over the cervix uteri ; and this is easily explained. The prac-

titioner's fears are roused in the latter cases, and he is upon the alert to give the necessary assistance. But in the former cases the symptoms proceed insidiously,—time passes without the occurrence of any symptoms, which lead the attendants or the patient to understand the necessity for immediate interference, and the practitioner yields to their feelings, in the momentary expectation of the hæmorrhagy ceasing, or of uterine action coming on. At last a sudden gush sinks the living powers.

Although, therefore, his impression is, that where an intelligent practitioner has the charge of the patient from the first threatening of hæmorrhagy, he may be enabled to judge, from the progress of symptoms, of the probable danger, it is very different where the discharge has been proceeding for some time before his assistance is required. Under such circumstances, he is not to be deceived by any temporary appearances of the patient having rallied, but to consider deliberately whether there have been such a flooding as may have injured the living powers.

He is to be directed in deciding upon this point, by a careful consideration of the age and health of the individual,—of the quantity of blood lost, and of the present symptoms.

With respect to the age and health, young women, particularly those in the better ranks, suffer less than those who have had a family, and than those in the lower ranks. It is unnecessary to remark, that where the woman has been previously in a state of debility, a very trifling loss of blood may prove rapidly fatal. In persons of this description, therefore, it is of great consequence to ascertain the quantity of blood lost, for if it exceed from twenty to thirty ounces by weight, active measures are required.

As to the symptoms, the good general rule is, that where there is pallidness of the face, feebleness of the pulse, and coldness of the limbs, the patient should be considered in great jeopardy.

In proceeding to explain the treatment of cases of uterine hæmorrhagy during the two latter months of pregnancy, the author must premise his dissent from the generally received doctrine, that accidental and unavoidable hæmorrhagy require a different mode of practice, a doctrine which he considers to have been productive of much injury.

He concurs, indeed, in the propriety of examining carefully in every case of hæmorrhagy (in the two latter months of pregnancy), the state of the uterus, to ascertain whether any portion of the placenta be attached over the cervix uteri. For this purpose, he has always practised and recommended, that if the exact state of the uterine contents cannot be ascertained by the ordinary mode of examination, viz., the introduction of one or two fingers, the hand should be passed into the vagina, in order that the practitioner may be enabled to insinuate a finger into the orifice of the uterus, so as to describe its circumference to the height of an inch.

Should any pulpy or stringy substance be felt by this examination, the inference is, that the hæmorrhagy proceeds from a portion of the placenta being separated in consequence of its attachment, but if no pulpy or corded substance be discovered, the hæmorrhagy must arise from an accidental separation.

Where the placenta is implanted on the cervix uteri, the first duty of the practitioner is, to decide whether palliative means are justifiable, or whether immediate delivery be necessary. This important practical point must be determined by a careful consideration of the circumstances of the case.

If the patient have scarcely exceeded the seventh month of pregnancy, and if the discharge have abated on the arrival of the practitioner, and have not sunk the living powers, every endeavour should be made to enable the patient to go on for a week or two, not only as affording a better chance of preserving the life of the infant, but as lessening the difficulty

and danger of artificial delivery, by favouring the development of the uterine texture.

With this view, every means which can contribute towards moderating the action of the heart and arteries, such as horizontal posture, perfect quiescence, and low diet, ought to be recommended. Under particular circumstances, it may be necessary to advise the internal use of some of the neutral salts, such as a solution of the nitrate of potass, or of the sulphate of alumen, that is, there are many individuals who, unless internal medicines are prescribed, disregard the rules for the management of the non-naturals. The internal use of neutral salts may contribute to lessen the action of the heart and arteries, but their influence in that respect must be very inconsiderable in checking hæmorrhagy, where there is an actual separation of a part of the placenta.

Particular directions must be given in those cases to summon the practitioner whenever there is any threatening return of the hæmorrhagy,

and, in the meanwhile, that at least an English pint of some metallic styptic solution be carefully injected per vaginam, by means of a common bag and pipe,* and that immediately after a drachm of tinctura opii, mixed with an ounce or two of gruel or thin starch be administered as an enema.

By this practice, the author has often succeeded in palliating symptoms for from two to three weeks, and, paradoxical as it may appear, he has sometimes found that the patients went on to the full time, and had a natural delivery without hæmorrhagy. He must admit, however, that in the few cases of this kind which he has met with, the event was very different from what he had anticipated.

This unlooked for termination of cases, which he had watched with much anxiety, was eventually explained. In those cases, there had been

* The author generally prescribes a solution of the sulphate of zinc, or of the sulphate of alumine, in the proportion of a drachm to an English pint.

a small lobule of the placenta adhering to the membranes, and at the distance of three or four inches from the general mass, and this had been attached to the cervix uteri. The astringent lotions thrown up the vagina had altered the texture of this lobule, and prevented its receiving or discharging blood. In mentioning this fact in his lectures, the author has sometimes described the size of such detached lobules as being that of a very small dog's ear.

Such detached lobules are connected with the general mass of the placenta by a few blood vessels, which are evidently foetal. When, therefore, the lobule in question ceases to receive blood from the uterus, either by a change of texture, excited by the topical styptics, or by a total separation from the surface of the uterus, the foetal blood can no longer circulate through it.* This, by the by, affords an additional evi-

* The author regrets that it has not been in his power to preserve any specimens of this curious deviation in the structure of the human secundines, for they have all occurred in the course of his private practice, and no con-

dence, that the hæmorrhagy does not proceed chiefly, and far less entirely, from the ruptured uterine vessels in cases of partial separation of the placenta.

Formerly, blood letting and the internal use of styptic medicines were prescribed in such cases, a practice still recommended by Dr Dewees, professor of midwifery in the University of Philadelphia.* He says,—

“ For this purpose, we should bleed under the restrictions just mentioned,” (viz., when the pulse is active), “ we should exhibit the sugar of lead with laudanum, as frequently as the exigencies of the case may require. Should these means moderate the discharge, and the

sideration has ever induced him to shock the prejudices which prevail upon this point. It is only in hospital practice that any liberty can be taken with the secundines. In the posthumous description of the gravid uterus of Dr Hunter, it is stated, page 37, that “ there is sometimes a small lobe or two (of the placenta) separated from the rest.”

* 6th Edition, page 383.

blood be found disposed to coagulate," &c. From these and other expressions of Dr Dewees, it is evident that he believes that the hæmorrhagy, from the separation of the placenta in the latter months of pregnancy, may be arrested by the coagulation of blood in the extremities of the ruptured uterine vessels, and that the drawing blood from a vein, and the exhibition of the acetate of lead and of laudanum, tend to promote such coagulation, or the contraction of the ruptured vessels to which he specially alludes.

The author has been accustomed (in lecturing), to urge a strong illustration of the inefficiency of this practice. He asks, whether, if any of the audience should wound his finger in mending a pen, he would direct a vein to be opened, and then swallow a dose of sulphuric acid, or of the acetate of lead, or whether he would bind up his wounded finger?

Hæmorrhagy, arising from the separation of the placenta, is to be considered *exactly* as that

from a wound. By moderating the action of the heart and arteries, the rapidity of the discharge may be lessened, but that is all that can be expected, and certainly no army surgeon would think of drawing blood by the lancet in a case of hæmorrhagy from the cut of a sabre, and far less would he trust to the internal use of astringents under such circumstances.

Another proposed method of stopping the discharge for the time, is rupturing the membranes and plugging the vagina, a practice strongly advocated by Professor Davis. He says (page 1041), after relating an unfortunate case where the efforts in dilating the os uteri had occasioned contusion and inflammation, which proved fatal: “ Since the date of the above case, the author has never been induced to make the attempt to force his way into the uterus, when its orifice has been in a state of obstinate rigidity, or even in the absence of a considerable amount of development and relaxation.”

“ But suppose the hæmorrhage should return, either once or repeatedly, the orifice of the uterus continuing in a rigid state, so as to involve the patient’s life in great jeopardy ; what other measure, or is there any other that can be proposed, by which her life might be placed in a state of security ? The treatment in such a case, which the author for many years has recommended and practised with great advantage, is that which was long ago suggested to the profession by Mr Puzos, under similar circumstances, viz., that of discharging the liquor amnii by rupturing the membranes.

“ It is a fact that the artificial discharge of the liquor amnii may, in a certain proportion of cases, be relied upon as a means of suspending profuse uterine hæmorrhagies ; and it will hereafter be made to appear, as it has indeed already been seen, that the discharge of the liquor amnii thus promoted may be depended upon as a means calculated to induce the action of parturition.”

Professor Davis has erred in supposing that Puzos recommended the rupture of the membranes, where the placenta is attached to the neck or orifice of the uterus. Puzos expressly says (page 334), that puncturing the membranes can only be useful in the cases which he had described in page 327, viz., “*Le décollement de quelque portion du placenta d’avec le fond de la matrice.*”

Even if Puzos had recommended rupturing the membranes in cases where the placenta is over the cervix or os uteri, his error must have been considered venial, because he was not acquainted with the true anatomical structure of the gravid uterus. His treatise was published in 1759 (after his death), but Dr Hunter’s splendid work, illustrating the economy of the gravid uterus, was not published till 1775.

That in cases of accidental separation of the placenta, previous to the occurrence of labour, the discharge of the liquor amnii has not unfrequently arrested the hæmorrhagy, is admit-

ted, but there are certain circumstances, to be noticed by and by, which render the success of the practice doubtful. It is very different in the case of attachment of the placenta over the os uteri. In that case it is more than probable that the rupture of the membranes would add greatly to the difficulty and the danger of the operation of turning, an operation which Professor Davis himself allows to be eventually necessary.

As to plugging the vagina with the view to arrest hæmorrhagy in the latter months of pregnancy, whether it be unavoidable or accidental, the author has no difficulty in declaring it to be most hazardous. Dr Stewart, who so strongly recommends this practice in cases of accidental hæmorrhagy, says,* that “where the placenta is over the os uteri, it is not a remedy which could be employed with safety or advantage.” And yet Dr Stewart has not stated the true

* Treatise on Uterine Hæmorrhagy, by Duncan Stewart, M. D., London 1816, page 49.

reason for the objection, which is, that the blood in such a case would accumulate within the uterus.

Dr Dewees, in strong language, also advises the practice of plugging the vagina, and he adduces two reasons for it. *First*, That the sponge introduced to stuff the vagina favours the coagulation of blood, by which he supposes that the hæmorrhagy is naturally arrested ; and, *secondly*, that the mechanical pressure promotes the dilatation of the os uteri. And he declares that the result of his experience has established to his conviction the utility of the practice. (page 390, *et seq.*)

The author feels compelled to say, that he cannot admit the accuracy of this reasoning, and he should ascribe the success which has crowned Dr Dewees's endeavours to some fortunate coincidence rather than to the mode of treatment.

Coagulation of the blood cannot stop hæmorr-

hagy arising from the separation of the placenta, because, as already mentioned, the discharge proceeds from the separated portion of the placenta in a greater degree than from the ruptured vessels, a circumstance evidently unknown to Dr Dewees ; and consequently the blood received into the adherent mass of the placenta must continue to flow from the detached part till the change alluded to (page 233) takes place.

With respect to the allegation, that plugging the vagina could dilate the os, or rather the cervix uteri, at a period of pregnancy previous to that (by several weeks), at which its usual development is effected, it seems quite inconsistent with the laws of nature. But the important objection to the practice is, that from the condition of the uterus after the seventh month of pregnancy, the blood discharged by the separation of the placenta, if prevented from passing per vaginam, may accumulate within the cavity of the uterus, and prove fatal, of which a remarkable case, witnessed by the

author in September 1816, has been already recorded, (page 234.)

In those distressing cases, then, where the placenta is implanted over the os uteri, artificial delivery must be had recourse to whenever the discharge is such as to threaten injury, either immediate or eventual, to the constitution of the patient. The object of this practice is to empty the uterus, and to promote its contraction ; in other words, to imitate the means which nature has provided for the prevention of hæmorrhagy after delivery, viz., the contraction of the womb, by which the bleeding extremities of the vessels are drawn into its substance, while the trunks of those vessels are at the same time strongly compressed, as already explained, (page 2 of this volume.)

Generally speaking, when this necessity occurs, the os uteri will be found sufficiently yielding, notwithstanding its appearing to be little dilated. Although the author had attended many cases of placental presentation, from

the year 1786, he met with no difficulty from the resistance of the os uteri till September 1816, and in that month he was called to two cases, where the patients seemed to be in articulo, from the deluge of the discharge, and nevertheless where the os uteri was in the state of obstinate rigidity, which Dr Davis has described (page 1042), and for the treatment of which he has so strongly recommended plugging the vagina.

Under those circumstances, the author neither ruptured the membranes, nor plugged the vagina, but had recourse to a method which he believes has not hitherto been suggested by any of the profession. He had upon many occasions, where it became necessary to turn the infant while the ovum remained entire, saved the patients the pain arising from forcing the hand into the uterus, by merely, after passing it into the vagina, pushing back the presenting part with two fingers, in such a direction as literally to turn the foetus round. He was thus enabled to hook down a foot, on withdrawing which,

and securing it, first with a riband, and then with a soft cloth, he had found that, by supporting the os uteri with two fingers of the right hand, and drawing forward the infant with the left, the uterus opened both rapidly and safely. This practice he adopted in the cases alluded to, and saved both patients.* The facility with which this operation can be performed cannot be credited by those who have neither tried nor witnessed it.

Suitable compression of the abdomen, by means of a binder, ought if possible to be applied in all such cases previous to performing the operation of turning.

As soon as the foetus and secundines are withdrawn, every means for promoting and securing the complete contraction of the uterus must be carefully pursued. The great hazard

* Dr Moir followed this practice with complete success, on the 1st January 1836. *Vide* First Part of these Observations, Appendix, p. 315.

is, that the cervix uteri may continue relaxed, while the fundus readily contracts. Under such circumstances, the practitioner is very apt to be thrown off his guard, for he feels, as he supposes, very distinctly the contracted uterus through the parietes of the abdomen, and some time may elapse before there be any discharge from the ruptured vessels of the cervix. Even two hours may pass without alarm, and this probably happened in the case of the Princess Charlotte. It will be found in those cases, that all vestige of the os uteri is obliterated, the vagina and uterus forming one continuous canal.

The knowledge of this fact has taught the author, for many years past, to dread this danger in every case where he has been obliged to force delivery in consequence of uterine hæmorrhagy. He guards against it, by introducing his right hand (immediately after all the uterine contents are expelled), and by applying his left hand to the surface of the abdomen, he compresses strongly the uterus between the two hands. In a short time he finds the cervix

uteri begin to contract, and he does not withdraw his right hand till he has literally, by pressure, brought the parietes of the cervix and os uteri into contact.

This mode of practice the author has pursued for above twenty years, and he has never yet met with a single instance where it proved hurtful. It has, indeed, been strongly objected to by Dr Lee,* but while his old pupil has advanced no other reasons for his objections than hypothetical assertions, the author could, if necessary, bring forward many living witnesses in proof of its safety and utility.

In those alarming cases, it is a good precautionary measure to direct an opiate enema to be administered, and it seems unnecessary to add, that every conscientious practitioner must deem it his duty to remain by the patient for several hours.

* *Cyclopædia of Practical Medicine*, vol. ii., p. 264.

As to cases of accidental hæmorrhagy previous to the commencement of labour, the patient must be very carefully watched, and if the ordinary palliative means prove unsuccessful, the same practice must be pursued as in the former case. But there are certain means of palliation recommended in such cases by most respectable authority, viz., the use of the plug and rupturing the membranes, of which the author must express his decided disapprobation.

Leroux many years ago recommended plugging the vagina in cases of uterine hæmorrhagy, and there can be no doubt that, previous to the completion of the third month of pregnancy, it is a most effectual method of checking the discharge. The condition, however, of the uterus in the latter months is very different from what it is in the early months, for its parietes are dilatable, and consequently, as already stated (page 234), if the flow of blood through the vagina be mechanically obstructed, the discharge may be accumulated within

the uterus, that is, between the surface of the uterus and that of the membranes.

It is in this way only that a case recorded by Dr Merriman in his Synopsis, (page 264,) can be accounted for. A medical practitioner of respectability plugged the vagina, and having, as he supposed, left the patient in a state of safety, mounted his horse to pay a few urgent visits. On his return he was greatly horrified at finding the patient dead. She had sunk rapidly after he had left her. In short, the objections urged against the use of the plug in placental presentations apply still more strongly to cases of accidental hæmorrhagy.

Rupturing the membranes is a practice which has lately been strongly recommended by several most respectable practitioners. It is alluded to, and sanctioned by Dr Denman, (vol. ii., p. 310.) It is recommended by Dr Merriman in his Synopsis, and his recommendation is founded upon the successful result of thirty consecutive cases, without a single failure. No won-

der, then, that it has been adopted by practitioners who are anxious to save as much as possible the feelings of their patients, or who are averse to incur the responsibility of active interference.

The professed object of rupturing the membranes in those cases, is to excite the action of the uterus ; in Dr Davis's words, " with a view to the gradual induction of the action of labour," (page 1053.) But every practitioner of experience well knows, that, even at the full period of utero gestation, many hours are apt to intervene between the rupture of the membranes and the occurrence of labour pains. If, therefore, a draining of blood continue, there is great hazard of the patient sinking. It must be quite obvious to any person who reasons upon the subject, that when accidental hæmorrhagy is diminished or suppressed by the discharge of the liquor amnii, it must be in consequence of the part from which the blood issues being brought into close contact with the surface of the infant's person. But no one can,

a priori, calculate whether the bleeding part is to be so applied. Dr Hunter invariably found, that where the placenta was attached to one side of the uterus, the limbs of the infant had been placed opposite to it. If, therefore, any portion of the placenta, so situated, be detached, the bleeding part, on the discharge of the liquor amnii, must necessarily be opposite to some of the voids left by the ordinary position of the infant, and the hæmorrhagy would, of course, go on.

Upon this principle, the author has always urged two objections against this practice, *firstly*, that the discharge of the liquor amnii may fail to check the hæmorrhagy; and, *secondly*, that it must increase both the difficulty and the danger of turning, should the urgency of the case eventually require that expedient. The result of Dr Ramsbotham's practice has suggested a third objection, viz., that the time lost in waiting for the effect of the rupture of the membranes may exhaust the living powers.

On a careful, and, he trusts, candid review of Dr Ramsbotham's very interesting details, he feels warranted in asserting that his first and third objections have been verified by those cases, in a degree which he could scarcely have believed. Indeed, he has stated (in lecturing), that if he had fabricated cases for the purpose of showing the danger of this practice, he could not have had the ingenuity to contrive the circumstances so graphically detailed by Dr Ramsbotham. Thus, in seven out of sixteen cases where this practice was had recourse to, the event proved fatal, and in all those seven cases, the author cannot resist the impression, that if turning had been accomplished at the time the membranes were ruptured, the event would have been very different.

During the last thirty years, the author has only met with two cases where he adopted this practice, and on both occasions he resorted to it with very great reluctance. In the first case, the patient had been flooding for at least seven hours before he was called in.

She supposed that she had felt the expiring struggles of the infant on the preceding evening, having already had the misfortune of bearing three or four dead children. When he visited her, she had no symptom of labour, and was in a state of great exhaustion. On his attempting to pass the hand through the os uteri, such fainting was induced as threatened immediate dissolution, and it therefore became necessary to rupture the membranes. The hæmorrhagy ceased, opiates and cordials were given, and the abdomen was firmly compressed. Her strength rallied, and uterine contractions came on at the distance of six or seven hours, and a dead infant was expelled, instantly followed by the placenta.

In the other case, the patient, though the mother of a large family, had always suffered much, during the first stage of labour, from the rigidity of the os uteri, insomuch, that till the author attended her, (which was not till she had had five or six children) her labour had generally been of two or three days and nights'

duration. When between seven and eight months advanced in her tenth pregnancy, accidental hæmorrhagy supervened, and the experience which the author had of the natural rigidity of the os uteri, induced him to rupture the membranes, and fortunately, it proved successful.

He can imagine one other case which might justify this practice, viz., where the operation of turning is opposed by the patient or attendants. He has met with a few cases where the patients consented most reluctantly to his interference, and he has no doubt that they would have positively refused to submit to that of a less experienced practitioner. In such cases, it is fair to give the poor woman a chance of life by discharging the liquor amnii.

With these exceptions, the practice in accidental hæmorrhagy must be the same as in hæmorrhagy from the attachment of the placenta over the os uteri, that is, whenever danger threatens, the operation of turning must be had recourse to.

Experience has, for many years, convinced the author that there should be no delay in the adoption of the appropriate practice when symptoms of danger take place, and he cannot understand Dr Ramsbotham's fears on this subject (page 188, part ii.*) Upon many oc-

* " When I have been obliged to have recourse to a forced delivery by turning, under a state of great exhaustion, I have frequently fancied, that the shock inflicted upon the nervous system by the violence of the operation has greatly increased the danger of the woman, and has sometimes induced a fatal result. In reflecting upon this presumption, in cases of sudden depression under a placental presentation, it has seemed to me desirable, if possible, to obtain a truce from the flooding before delivery is attempted, that the system may somewhat rally from its preceding effects. I have therefore thought, that if, in these desperate cases, by any gentle means, the liquor amnii could be discharged, without inducing a greater degree of placental separation, some advantage would be derived from uterine contraction, and the violence of the discharge would be thereby checked. I must however, in candour declare, that I have not had an opportunity of realizing the practical effect of this suggestion, since it occurred to my mind; I offer it therefore merely as an object of future consideration. The method I propose is, to penetrate the centre of the placenta by a perforator, or other sharply pointed instrument, and allow the liquor amnii to run off. If the discharge be thereby checked, de-

casions, the patients have been in the utmost extremity when he has been called in, and yet he has never hesitated in instantly forcing delivery (after giving some ardent spirits, if the patient could swallow), and in a great number of those cases, his efforts have been successful.

His conviction is, that the means employed to complete the delivery rouse the living powers, and he can solemnly affirm, that the chief error he has witnessed in the treatment of those cases has been procrastination. That on some occasions of uterine hæmorrhagy during the latter months of pregnancy, no human means can save life, is a melancholy truth ; but that, in a very great majority of fatal cases, the indecision of the practitioner is the chief cause of the mischief, he verily believes ; and when this

livery may be put off for a short time ; but if the discharge should continue afterwards, delivery must not be delayed. Let it be clearly understood, however, that this act will not supersede the necessity of delivery sooner or later, and that it will cause some loss of the child's blood from the placental vessels."

subject is seriously considered, a conscientious practitioner would naturally ask himself, what harm can ensue from active interference, before decided symptoms of immediate danger manifest themselves?

Hitherto, the bugbear which seems to have haunted the minds of practitioners in the treatment of those cases, is the supposed difficulty, or danger of dilating the os uteri. But if it be practicable when the membranes are entire, to hook down a lower extremity of the infant, without carrying the hand through the os uteri, which the author most positively affirms that he has done innumerable times, and if when a lower extremity of the infant is drawn through the uterus, the cervix and os uteri dilate readily and safely, (being duly supported) which, according to his experience, invariably happens, all objections founded upon the difficulty or danger of turning must be held to be futile.

After extracting the infant and secundines, the complete contraction of the uterus must be

secured, and for this purpose, in the early years of his professional life, the author trusted to firm compression of the abdomen, and to the injection of a quantity of cold water into the rectum and into the vagina, by means of a common bag and pipe. But, for many years, he has found the method already described (page 258) to be, in general, adequate to this purpose.

At one time, he was accustomed, in all cases of flooding, where, after delivery, the uterus did not readily contract, to pour from a height a quantity of cold water on the naked belly. Lately he has seldom had recourse to this apparently formidable practice, the more gentle method already described commonly proving efficacious.

The cold effusion in those cases, was employed for a double purpose, viz., to promote the contraction of the uterus, and to force the blood from the surface to the internal vessels, in order to keep up the circulation.

In one very interesting case which occurred many years ago, he had recourse to the cold effusion with another view. The patient, after bearing her first child, had had alarming hæmorrhage. When again in labour, the author dreading the recurrence of the same event, had made his arrangements accordingly. After the birth of the infant, he waited for the natural separation of the placenta, but to his horror, in less than five minutes after the birth of the infant, strong bearing down pains took place, the placenta was thrown off, followed by a deluge of blood, by violent convulsions of the muscles of the face, and by apparent expiration.

Nothing, in the author's opinion, could restore animation but exciting the action of the respiratory organs, and for this purpose, he dashed a quantity of cold water on the naked chest. A deep inspiration was the immediate effect, and the patient recovered. She had afterwards two children, without any threatening of hæmorrhagy.

Having checked the hæmorrhagy, the practitioner is to direct his attention to supporting the living powers by suitable cordials and nourishment. Where the loss has been considerable, large doses of opium, such as a three grain pill every three or four hours, have been found highly useful. The tincture of opium is apt to be vomited, even though given mixed with wine or brandy.

If the patient cannot swallow, opiates are to be administered as enemata, flannels soaked in warm brandy are to be kept applied to the pit of the stomach, and the face and hands should be occasionally bathed with ardent spirits.

Under such circumstances, it has been proposed to transfuse blood from a vein of a healthy individual, into that of the patient who seems exhausted, and certain experiments apparently confirming the utility of the practice have been published.

The objections which the author has been

accustomed to urge against this proposal are, in the *first* place, that from all the phenomena where uterine hæmorrhagy proves fatal, there is reason to conclude that the cause of death is paralysis or some analogous condition of the respiratory nerves, and it does not seem probable that, after this change has begun, any trifling addition to the circulating mass of blood could remedy it. If death could be proved to be owing to the supply of blood not being sufficient to keep up the action of the heart, transfusion might be a plausible means of relief.

A *second* objection which he has urged, is founded upon the recorded cases being too few and too little varied, to warrant any general inferences. The recoveries which the author has witnessed, under circumstances apparently hopeless, lead him to be very sceptical in the belief, that the transfusion of a few ounces of blood could have the effect ascribed to it by those who have so strongly recommended this practice. Out of innumerable cases of recovery where the symptoms seemed

desperate, he need only mention two. In the one case, the patient continued from nine in the morning till six in the evening, incapable of swallowing or articulating, with no pulsation at the wrists, and with cold extremities. As she breathed, and had neither convulsions nor groaning, external stimulants were sedulously applied, and opiate enemata administered. She eventually recovered, and although the case happened more than fifteen years ago, she is still alive and in good health.

As to the second case, the lady had lost two wash-hand basinsful of blood before the author's arrival. She had no pulse at the wrists, but was able so far to speak as to request to be allowed to die undisturbed. She was prevailed upon, however, to submit to delivery, and a living infant was extracted. The pulse continued imperceptible for above three hours and a-half, when the author left her (in consequence of urgent engagements) under the charge of a very intelligent practitioner. As after pains had begun, her eventual recovery was confi-

dently predicted, and the lady is now in good health. Had a few ounces of blood been transfused in those two cases, the recovery would have been naturally ascribed to that remedy.

Dr Collins's late valuable publication confirms the author's objection to this practice. In two cases where it was had recourse to, in the Dublin Lying in-Hospital, it proved unsuccessful, and in one of the cases prejudicial, according to Dr Collins's opinion. In the first case, "about ten ounces of blood from a healthy young woman were easily thrown into the median vein of the patient's right arm. She expired a few minutes after the operation." Dr Collins adds, (page 130.)—"We rather think that transfusion hastened her death."

"Between eight and ten ounces of blood were slowly and carefully injected into the median vein," in the second case recorded, (page 159,) "but the patient died a few minutes after the operation." This case confirms, in a very unexpected manner, the chief objection

to this practice which the author has always urged. Dr Collins states (page 161,) that “on dissection, the right auricle was found greatly distended with blood in a fluid state, so much so, that previous to opening it, it felt as if it contained air, but none whatever was observed in it. The other cavities of this organ were quite empty, the injected blood seeming to have passed no farther than the right auricle.”

When the patient becomes capable of swallowing, cordials and light nourishment, adapted to the habits and circumstances of the individual, must be carefully administered. Young practitioners are apt to be alarmed by the vomiting, which often occurs in those cases ; but if the pulse at the wrists be distinct, the vomiting will be found to accelerate the rallying of the living powers.

Respecting the after treatment of patients who have recovered from excessive loss of blood, the chief circumstance which the author

has endeavoured to impress upon the profession, is the necessity for limiting the quantity of liquids, allowed by way of nourishment or drink, for the first two or three weeks. He has repeatedly been called to cases, where, from inattention to this regulation, inflammatory symptoms requiring venesection had supervened, and where the injurious consequences of indulging in diluents were plainly manifested by the appearance of the subtracted blood. In one case where it was necessary to draw two breakfast cupsful, amounting to twenty-four ounces at least, the crassamentum in each cup did not exceed the size of the yolk of an ordinary hen's egg.

SECTION II.—HÆMORRHAGY OCCURRING
DURING THE FIRST TWO STAGES OF
LABOUR.

For many years of the author's professional life, he did not believe, that after uterine contractions had really commenced, there could be such a degree of hæmorrhagy previous to the birth of the infant, as to require interference. But within these twenty years he has been called to a few cases of that description.

In some of those cases the symptoms were so imperfectly detailed to him, that he could not positively decide whether the placenta had been originally attached over the os uteri, or had been accidentally separated during the first stage of labour. The circumstances which led him to suspect that it had not been originally over the os uteri, were, the allegation that the patient had attained the full period of utero gestation, and that labour throes had preceded the hæmorrhagy.

If he could have depended upon the accuracy of those accounts, he should have at once understood the nature of the case, because, notwithstanding the allegations of some most respectable practitioners, he cannot believe it possible, that in any case where the placenta is implanted over the cervix uteri, the woman could go on to the full period of pregnancy without a discharge of blood, and still less that, under such circumstances, uterine contractions should precede hæmorrhagy. But in the cases alluded to, he could place no reliance upon the history of the symptoms.

He has, however, now witnessed two cases where there could be no doubt that the placenta, though originally attached to the fundus or body of the uterus, separated in the progress of the labour, and produced fatal hæmorrhagy.

In the first case, it was the lady's ninth pregnancy, and her health was unimpaired. She sent for her medical attendant, a most intelligent and experienced practitioner, early before

breakfast, and on his arrival he found the labour pains weak and lingering. As they continued trifling for some hours, she expressed a wish that the doctor should visit any of his patients whose cases might be urgent. But as he was preparing to take advantage of this permission, he had a sudden summons to her bedroom, in consequence of her having unexpectedly become sick and faintish. On giving her some stimulants, the labour throes increased in power and frequency, and were accompanied with a discharge of a few coagula. Within less than an hour, a still-born infant was thrown off, followed instantly by the expulsion of the placenta, and a profuse discharge of blood.

All the ordinary means for supporting the living powers and promoting the contraction of the uterus were most anxiously and actively employed, and when the author was called to visit the patient, his impression was, that those means had been successful ; nevertheless she sunk within less than half an hour.

The subject of the other case had had several children. She began to have slight labour pains soon after midnight. About five of the morning a few clots of blood were discharged, and from that time every now and then the same circumstance happened. When the author's assistance was requested, which was about four hours after the first appearance of the discharge, he found her strength much reduced, and on examination, he plainly perceived the loosened edge of the placenta pressing at the right side upon the os uteri, which was so dilated that a crown piece could have been passed through it. Instant delivery was had recourse to. The extraction of the infant, which was quite dead, was followed by the discharge of the placenta and a considerable quantity of coagulated blood. As the uterus contracted, and the strength and spirits of the sufferer somewhat rallied, hopes were entertained that the event would prove favourable. In a few minutes, however, there was a sudden gush of blood, and although its progress was quickly checked, distressed groan-

ing supervened, and in a short time the event proved fatal.

By what mechanical cause the separation of the placenta happened in those two cases, the author has never been able to explain. He was solemnly assured, that in both instances the individuals had been in previous good health, and that the labour pains at first had been trifling ; there was, therefore, apparently no mechanical cause for the separation of the placenta.

Both those cases very unequivocally prove the fallacy of the opinion which has been so prevalent among the profession, that in accidental separation of the placenta, the induction of uterine contractions can stop the discharge. It is to impress this precept upon the minds of young practitioners that those distressing cases are recorded.

SECTION III.—HÆMORRHAGY AFTER DELIVERY.

THAT sometimes alarming discharges of blood take place after the completion of the three stages of labour, was well known to the profession, but when the author studied, the hazard of internal uterine hæmorrhagy supervening to delivery was not even imagined. In the first case to which he was called, the patient was dead before his arrival, and although the circumstances led him to believe that there must have been internal hæmorrhage, he was not permitted to ascertain the fact.

But within a very short time after that occurrence, he received the particulars of a case from an old pupil of his father, which completely confirmed his opinion. The wife of a respectable tradesman in a country town unexpectedly died, within less than two hours after delivery. The corpse was laid out upon a table

in a spare room, and, to the horror of the attendants, on entering the room next morning, the floor was found covered with blood. From that date, which happened nearly forty years ago, the author has been accustomed to explain this cause of danger to his pupils, and to point out the appropriate practice.

Of this untoward accident, the evidences are langour, continued pain in the small of the back, faintishness or sickness, feebleness of the pulse, singing of the ears, swimming of the head, and if these symptoms be disregarded, oppression at the precordia, great restlessness, laborious breathing, sudden delirium with a pallid countenance, coldness of the surface and convulsions, rapidly follow.

It has been already stated (page 258), that in some cases the cervix uteri, after the expulsion of the infant and secundines, remains in a relaxed state, forming one continuous canal with the vagina, while the fundus and body of the uterus contract. Under those circumstances,

the vessels of the cervix gradually pour out blood, and this congealing and accumulating within the vagina, in consequence partly of the position of the patient, and partly of the contraction of the external parts, eventually forms a mass which mechanically dilates the body of the uterus, and permits the access of blood to its arterial trunks. A sudden increase of effusion is the necessary consequence.

Internal uterine hæmorrhagy supervenes to delivery, under another combination of circumstances. While the cervix and os uteri contract, the fundus and body of the uterus are quite inert, and the cavity thus produced is rapidly filled with blood, which instantly congeals. The coagulum thus formed is soon increased to a large size, sinking quickly the living powers.

These two degrees of the accident explain the discrepancies in respect to time, at which symptoms of danger take place. In the former case, from one to three hours may elapse before

the patient seems to suffer, while, in the latter case, the symptoms of danger occur within the hour.

There is no difficulty in ascertaining the nature of the case, for whether the accumulation has begun in the cervix uteri and vagina, or in the cavity of the uterus, the untoward symptoms do not manifest themselves till the whole passage be filled with coagulated blood. On introducing, therefore, two fingers into the vagina, the accumulation will be at once detected.

The individuals liable to this accident, are those in whom the first stage of labour has been protracted beyond twelve hours—those who have been subjected to instrumental delivery—those who have had a large family—those who have had their habit relaxed and debilitated by previous disease, and those who have borne twins or triplers.

Besides these predisposing causes, there is

reason to believe, that peculiarity of constitution, or certain conditions of the system, have a tendency to produce this effect. Thus a remarkably healthy person, not above twenty-six years of age, was confined of her second child, under the author's care. Most alarming internal hæmorrhagy followed, and he was then informed that the same circumstance had occurred after her first confinement. After her third, fourth and fifth delivery, there was no threatening of the recurrence of the accident, but after being delivered of her sixth child, the discharge proved overwhelming, and she was saved with great difficulty.

Contrasted with this, another case may be stated. The patient was a very delicate relaxed person, and after bearing two or three children, she had very alarming internal hæmorrhagy for three or four successive times, but in her last four or five deliveries, though she is now the mother of a large family, she has had no threatening of the accident, and yet the vigour of her frame is not improved.

These facts lead the author to believe, that although, generally speaking, internal uterine hæmorrhagy supervening after delivery, is occasioned by imperfect contraction of the uterus, there may, in some cases, be a violent determination of blood to the uterine vessels.

For the management of such alarming cases, the most prompt and energetic measures must be adopted. The accumulated blood must be instantly extracted, by the introduction of the right hand,* and the uterus must be forced into contraction. As already stated, (page 258) the author, for many years, has succeeded in accomplishing this, by means of pressure with his hand, but in alarming cases, where there has been a great loss before the nature of the case was understood, in addition to the manual assistance, a quantity of cold water should be dashed on the naked belly. After the con-

* The author has often drawn out, in those cases, as much blood as would fill an ordinary wash-hand basin.

traction of the uterus is thus secured, the means detailed (page 276) are to be adopted.

Mons. Trehan has proposed (vol. 33d of the *Journal Complementary du Dictionnaire des Sciences Medicales*, page 367), compressing the aorta, in those cases of hæmorrhagy after delivery. With this view, he advises the practitioner to stand on the left side of the woman, and with the fingers of the right hand placed in a line, so to force down the abdominal parietes, as to feel the pulsations of the aorta over the lumbar vertebræ. That artery is then to be firmly compressed for six or seven minutes. But the editors of the *Journal Complementary* have stated, that in one of Mons. Trehan's cases, the hæmorrhagy returned three times, notwithstanding the compression of the aorta, and that in another case where the placenta was retained, Mons. Trehan adopted this practice, but it proved so inefficacious that another practitioner was called in, and, notwithstanding the immediate extraction of the secundines, the patient was lost.

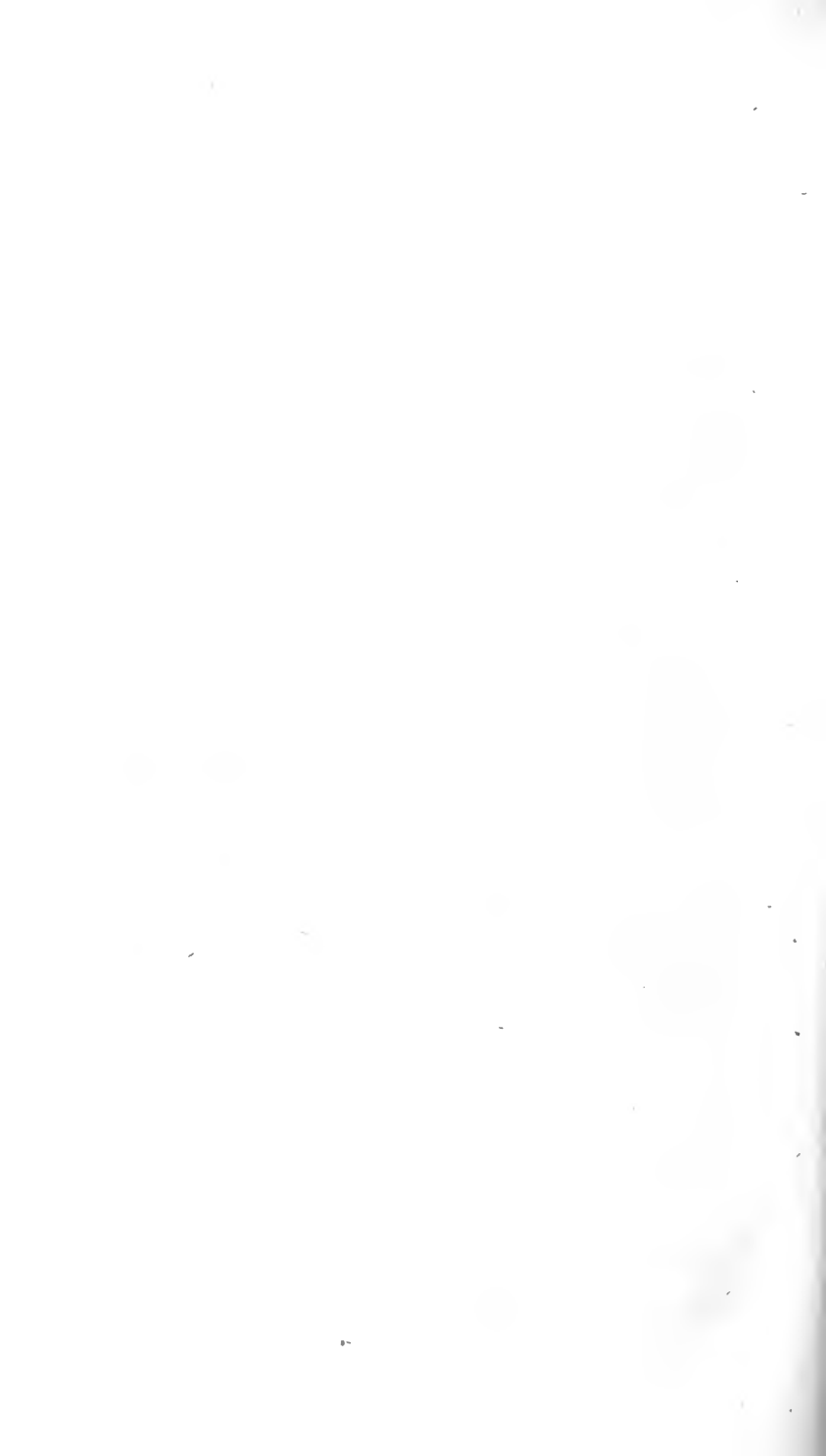
Above forty-six years ago, the late celebrated Dr Denman suggested to the author, in presence of Dr John Hemming, then physician to the Ousoulston Dispensary, a similar method. Dr Denman's suggestion was a more plausible one than that of Mons. Trehan. It was to introduce the hand into the uterus, and to compress the aorta just above its bifurcation.

The author was then a very young man, but he ventured to state, with becoming deference, that although the aorta were thus compressed, it could only stop the flow to the uterine hypogastrics, for the spermatics come off from the aorta above its bifurcation ; besides, in some individuals, those arteries proceed from the emulgents. But as the different arterial branches supplying the uterus communicate freely and extensively with each other, the blood transmitted to the spermatics would necessarily pass through the open extremities of both sets of arteries.

Indeed, even at that early period of the

author's professional life, he was so strongly impressed with the absurdity of this proposal, that he ventured to tell his friend Dr Hemming, that he did not believe it could ever be seriously attempted, by any individual who had witnessed the rapidity of the symptoms in cases of hæmorrhagy, and who had any knowledge of the anatomical structure of the uterine system.

On the means of preventing the occurrence of hæmorrhagy after delivery, the author can say nothing satisfactory. The slow extraction of the placenta, and firm compression of the abdomen, by the use of a suitable compress and roller, are the means to which he trusts. As to the ergot of rye, in which many practitioners confide, he has already stated his reasons for believing that medicine to be quite inert.



CONVULSIONS DURING PREGNANCY AND LABOUR.

DR RAMSBOTHAM has well remarked, that “in the variety of afflictive occurrences to which the latter stages of pregnancy and the act of parturition are especially liable, there is no one so terrific in appearance as an attack of convulsions. Other affections may perhaps be equally dangerous to life, but they are divested of that horror which convulsions occasion.”

The phenomena of convulsions during pregnancy or labour are indeed such as to excite sympathy and apprehension to the utmost possible degree. While the muscles of the face, and those of the body and extremities subservient to motion, are violently and involuntarily contracted and relaxed, there is an appearance of the countenance which is truly frightful. The face is flushed, and sometimes

of a dark purple hue, the eyes are turned up and the tongue is alternately protruded and retracted, with a hisping noise, followed by frothing at the mouth, the froth being sometimes tinged with blood, the veins of the neck and temples are greatly distended, and the carotid arteries beat inordinately. The duration of the fit is very various, sometimes not exceeding a few minutes, and sometimes extending to above half an hour.

After the fit has ceased, the patient, in the majority of cases, remains insensible, and apparently in a profound sleep, from which she is only roused by a second attack. But, in some cases, the moment the fit is over, the patient becomes conscious, and feels as if she had been dreaming, being totally unaware of her previous suffering. Generally speaking, the immediate return of sensibility follows only slight fits of short duration, but the author has met with a few exceptions, that is, where, after a fit has lasted from twenty to thirty minutes, consciousness followed almost immediately on its

termination. He has seen also a few cases where supersensation occurred when the fit ceased.

If the case be left to the resources of nature, the fits recur, with increasing frequency, till the living powers become exhausted. In many of those cases, there are modifications in the phenomena ; thus, there is most violent grinding of the teeth, instead of forcible protrusion of the tongue, the convulsions are more severe on one side of the person, instead of equally affecting both sides, and during the intervals, there is stertorous breathing, with occasional convulsive starting, instead of profound oppressive sleep.

At first, during the intervals between the fits, the pulse is slow and oppressed, the pupils of the eye dilated, and the heat of the surface increased, but as the fits continue, the pulse becomes frequent and irregular, the pupils are contracted, and the surface is covered with a clammy exudation.

It seldom happens that a single fit proves fatal, though the author has witnessed a few instances where that happened. He has repeatedly seen death follow a second fit. Where a succession of fits precedes the fatal event, the phenomena, previous to death, very much resemble those of apoplexy, that is, along with the almost continued convulsions, there is stertorous breathing with turgid countenance.

Of those symptoms, the total insensibility which invariably accompanies the convulsions, furnishes the great mark of distinction between this formidable disease and hysterical affections. Modifications of hysteria certainly upon some occasions resemble very nearly in the involuntary contractions and relaxations of the muscles subservient to motion, the disease in question, but in such cases the patient can be made to swallow on being desired to do so.

Dr Burns has very well described, in the following words, the ordinary hysterical affections which occur during pregnancy. “ Hys-

terical convulsions are not uncommon during gestation, and more especially during the first four months. They occur in irritable and excitable habits, or in those who are naturally disposed to syncope, or who have been exhausted by any pain depriving them of rest, or by alvine discharges. They are distinguished by the face usually being pale during the attack, the countenance is very little distorted, there is no foam issuing from the mouth, the patient, for a time, lies as in a faint, and then has convulsive motions, or screams and sobs, and the fit is generally terminated by shedding tears."

The affections, however, thus described, could scarcely be mistaken for eclampsia. But, as already mentioned, cases occasionally occur where hysteria does so imitate the phenomena of true eclampsia, that the only mark of distinction is, the insensibility which attends the latter disease.

Formerly the convulsions peculiar to pregnancy, were confounded with epilepsy by the profession at large, and the author believes, that

he was the first who pointed out minutely the marks of distinction. In the fifth volume of Dr Duncan's *Annals of Medicine* for the year 1800, he published the following observations.

“ The old distinction between eclampsia and epilepsy has been rejected by Dr Cullen, without sufficient reason. The convulsions that occur during pregnancy and labour should be distinguished by the former name, for the disease is always an acute one, and it never, as far as my experience goes, lays the foundation for habitual epilepsy. To an inattentive practitioner, indeed, the phenomena appear similar to those of epilepsy ; but, independent of its violence and fatality, there are many circumstances peculiar to it. This has been remarked by several authors, particularly by Dr Denman ; but those circumstances have never been accurately pointed out in any publication which has fallen into my hands.

“ But the eclampsia, peculiar to pregnancy

and labour, differs from epilepsy in the following respects :—

“ 1. The symptoms which precede the attack are well marked, announcing to an experienced practitioner the approach of the disease.

“ 2. If the first fit do not prove fatal, and if no means of cure be attempted, it is within a few hours followed by other paroxysms, provided delivery do not take place.

“ 3. After the paroxysms, even where they have been severe, the patient in many cases continues quite sensible during the intervals, and the sensibility returns the moment the fit is off.

“ 4. What may appear still more extraordinary is, that, in some cases, there is a remarkably increased susceptibility of impression of the external senses ; and this supersensation

is not confined to patients in whom the convulsions are slight.

“ 5. The aura epileptica never occurs in the cases alluded to.

“ 6. The pulse is, in every case, affected in some degree during the remissions of the fits. It is slow, or oppressed, or intermitting, or frequent and feeble. But it is most commonly slow and oppressed, becoming fuller and more frequent after blood letting.” His experience since that time has amply confirmed the accuracy of those remarks.

Having premised these general observations, the author proceeds to consider the phenomena and treatment of convulsions occurring in the latter months of pregnancy, or during or after the act of parturition.

SECTION I.—CONVULSIONS DURING THE
LATTER MONTHS OF PREGNANCY.

CONVULSIONS during pregnancy seldom occur before the completion of the seventh month, insomuch that the author has not seen more than a few cases which were exceptions to this general rule. The fits are preceded most frequently by lancinating pain of the head,* sometimes by crampish pain of the stomach, and sometimes by œdematous swelling of the face and upper parts of the person.

“ Fixed pain in one part of the back, with or preceding the affection of the head,” has been mentioned by Dr Burns (page 236) as

* Dr Burns has well pointed out (page 237,) the distinction between those degrees of headache, which portend the occurrence of convulsions, and those to which many individuals are habitually liable.

sometimes occurring. The author has never met with any case in which this symptom was present.

Where the fits terminate fatally, the appearances after death shew that the uterus had burst,* or that there is great turgescence of the vessels, or an effusion of blood or serum, within the cranium.† When a single fit destroys life, it is found that there had been rupture of the uterus, and when there has been a succession of fits previous to death, the above morbid appearances within the cranium have been discovered.

As to the prognosis, it must be always guarded in individual cases, because a single fit may kill. When the author began practice, this affection was considered perhaps the most fatal which occurred in pregnancy or during labour,

* Dr Collins, page 203.

† Dr Denman, vol. ii., page 358—Dr Dewees, 6th edition, page 462—Dr Ramsbotham, part ii., page 273.

but for many years past it has proved more formidable than fatal.

When the fits continue for a certain time, the circumstances which portend danger are, the increased frequency of the fits, with total insensibility, and stertorous breathing, and occasional distressed groaning during their intervals. On the other hand, recovery may be expected, if the intervals between the fits increase, and if the breathing be natural, although the insensibility continue.

With respect to the causes of convulsions during pregnancy, there is no doubt in the author's mind, that the predisponent cause is, the peculiar condition of the system which accompanies utero gestation, because circumstances occasion convulsions in that state, which have no such influence in women who are not pregnant. Dr Burns entertains the same opinion. (Page 484.)

Admitting this fact, it may be interesting to

ascertain the peculiar condition of the system during pregnancy, which occasions this predisposition. It has always appeared to the author, that the augmented quantity of circulating blood, the pressure of the gravid uterus on the great blood vessels passing through the abdomen, and the increased susceptibility of impression of the nervous system, must necessarily, for the time, alter greatly the constitution of the individual.

Besides these predisponent causes, there are two others which have not been sufficiently attended to, viz., great distension of the abdomen and œdematous swelling of the upper parts of the person, especially the face, chiefly observed in the morning on rising from bed.

Dr Denman, and many other respectable authors imagine, that peculiarity of constitution predisposes to convulsions in pregnant women. He says (vol. ii. page 362), “ But it is not only in weak and very nervous habits that convulsions occur, as they sometimes happen in

plethoric constitutions, and are accompanied with a strong action of the vascular system in general, or of some particular part of the body; though I do not recollect a case which could be attributed solely to this cause. With such different constitutions and indications, some with all the symptoms of debility and depression, and others of plethora and fever, the method of treatment must of course vary."

From all that the author has seen, he is convinced, that while pregnant women of every different constitution are liable to convulsions, when exposed to any of the exciting causes, the robust and plethoric are certainly more subject than others to this alarming affection.

These circumstances, as predisposing to convulsions, were stated by the author (*Annals of Medicine* for 1800, page 329), above thirty-five years ago, and his experience since that time has tended to confirm the opinion. In the observations referred to, it is remarked, that "women in their first pregnancy, and those

who carry more than one infant in utero, are most liable to convulsions," a fact which has been completely established by the observations of many respectable practitioners. Dr Collins, for example, mentions, that in thirty cases of convulsions occurring in the Dublin Lying-in Hospital during his mastership, twenty-nine were patients pregnant for the first time, and two of the thirty had twins. Dr Merriman (Synopsis, page 141) states, that twenty-eight out of thirty-six cases of convulsions which he had witnessed, were instances of a first pregnancy, and that in two of the number there were twins.

It appears to be Dr Burns's opinion, that the state of the spinal cord predisposes to convulsions. He says, (page 236,) " I am pretty well satisfied, that in most cases, although the head be pained, yet the spinal cord is the part originally diseased, and the head only suffers in a secondary way." The author has never been able to detect any evidence of an affection of the spinal cord,

or the nerves issuing from it in this disease.

Little difference of opinion has prevailed respecting the exciting causes of convulsions during the latter months of pregnancy. Corporeal or mental agitation, and all circumstances occasioning fatigue or violent pain, are generally enumerated as such.

All the phenomena of the disease indicate, that what is termed the proximate cause, is some affection of the brain. The convulsions, the insensibility, and the stertorous breathing, are well known to follow injuries of the head from mechanical causes; and the distended state of the vessels, and the serous and bloody effusions discovered within the cranium in fatal cases, so unequivocally support this doctrine, that it must seem wonderful that it could ever have been controverted.

The only explanation of a difference of opinion on this subject which the author can

fancy to himself is, that hysterical affections and convulsions supervening to excessive loss of blood, have been confounded with the disease now under discussion. Thus, Dr Dewees has, (in his sixth edition, page 463,) recorded as a case of convulsions, a well marked instance of hysterical paroxysms.

For the treatment of those alarming cases, various contradictory means were recommended by practitioners of the highest reputation, when the author began practice. Even in the year 1801, Dr Denman expressed himself in the following terms, (vol. ii., page 356.) “ In consultations in cases of this kind, I have generally observed, that the person who advanced his opinion in the most confident manner, prevailed on the rest to acquiesce in his sentiments ; the records of experience having been thought insufficient, or not so duly weighed, as to satisfy our minds, or to justify our forming an irrefragable rule of practice.”

Accordingly, from the time the author

studied till the year 1791, he had occasion annually to see several women die from convulsions during the latter months of pregnancy. The practice adopted was, insinuating a cork, wrapped in a piece of linen rag, between the jaws to protect the tongue, venesection from the arm, active purgative glysters, dashing cold water on the face whenever the fit threatened, and accelerating delivery, if there were any natural tendency to that process.

As he observed that always after the bleeding, a considerable interval elapsed before another fit came on, it occurred to him, that perhaps the subtraction of blood was not carried far enough. Adverting to the fact, that although the phenomena towards the fatal termination of convulsions be apparently those of apoplexy, the previous condition of the vascular system must be very different in the two cases, he inferred, that a large bleeding might probably relieve the vessels within the cranium more effectually than could be expected in cases of apoplexy, where in general some mor-

bid state of the blood vessels prevails. In the first case therefore, which happened in the Lying-in-ward of the Royal Infirmary here, during the year 1791, he directed bleeding to the extent of fifty ounces by weight at once, and the success was so remarkable as to warrant his continuing the experiment.

In the observations inserted in Dr Duncan's Medical Annals for 1800, it is stated, that "during fifteen months previous to September 1800, the author had been called to twelve cases of convulsions during pregnancy, and that every patient recovered." Since that time he has not seen a single fatal case of convulsions previous to labour, excepting three, where the symptoms were hopeless before he was sent for, and he attributes this success entirely to the large bleedings. He never directs less than about fifty ounces by weight to be drawn at first, and if there be not a decided improvement within the hour, he advises the same quantity to be again subtracted. He is quite convinced that no other than slight degrees of

the disease can be expected to yield to bleeding carried to the extent only of twenty or thirty ounces, a practice which he sees recommended by some respectable practitioners of the present day.

Experience has taught him, in directing the first bleeding, to disregard peculiarity of constitution, for the most delicate persons require the same quantity to be subtracted at first as the most robust. In a large proportion of the individuals in the lower ranks, who have been apparently saved by this practice, the diet had, previous to the occurrence of the disease, been for months, perhaps for years, chiefly or entirely farinacious; and in several of the cases in the better ranks, the subjects were of a feeble delicate habit. The symptoms were so urgent in some of the patients of the latter description, when the author's aid was requested, that he recommended a vein to be opened, at once, in both arms.

One remarkable illustration of the efficacy of

this practice occurred many years ago. The lady was of a very weakly habit, having been for years almost constantly an invalid. After having undergone considerable fatigue when between seven and eight months pregnant of her second child, she complained of severe crampish pain in the stomach, for which thirty drops of laudanum were administered. Soon after this, violent convulsions came on, and the author was sent for. He directed sixty ounces (by weight) of blood to be drawn; and although the fits occasionally recurred, and she continued in a state of insensibility for three days (premature labour having taken place in the meanwhile), she eventually recovered. In this case, the increased quantity of blood was drawn, in consequence of the patient having had an opiate, and this is the only instance of recovery where a dose of laudanum had been given, previous to the use of the lancet, which has fallen under the notice of the author.

At one period of his life, he advised the

blood to be drawn from the jugular vein, but he met with so many cases of failure in the performance of the operation, that he was obliged to adopt, as the general rule, the ordinary practice of bleeding from the arm.

He was called to a case in the year 1799, where, from the extent of the œdema, it was impossible to obtain, either by means of the lancet or of leeches, a sufficient discharge of blood, and the only means of relieving the symptoms, as the patient could not swallow, were, shaving the head, and covering its whole surface with blistering plaster. The frequency and violence of the fits continued to increase for many hours, and the case was considered hopeless, but at last an immense discharge issued from the blistered parts, and a remission of the fits for four or five hours followed, during which, the power of deglutition was in some measure restored.

A fresh blister was now applied, and a dose of the saturated tincture of *digilatis* was given

every half hour, till a very copious discharge of urine occurred, when large doses of camphor were substituted, and eventually the fits ceased. The pregnancy went on for another fortnight, when labour began, and the patient was safely delivered of a dead infant.

Nearly thirty-three years elapsed before the author met with a similar case, and although the symptoms were perhaps still more alarming, the patient eventually recovered, and has since born two children without any untoward symptoms.*

After venesection, an active purgative enema should be administered, and a careful inquiry into all the circumstances of the case is to be instituted, for the purpose of ascertaining the nature of the exciting cause.

* The particulars of those two cases are recorded in the Appendix, not only because they illustrate the author's practice, but because they furnish a picture of the disease well calculated to impress the phenomena upon the mind of young practitioners.

The propriety of inducing labour artificially in such cases, is one of those points on which there has been a difference of opinion amongst practitioners of deserved eminence. Thus, Dr Burns says, page 237, “but in no case are we to endeavour to bring on labour, or force delivery.” This practical precept is, in the author’s opinion, expressed rather too strongly. Dr Burns admits, that if uterine contractions spontaneously occur, the practitioner must assist. But there is another case imperiously demanding interference, viz., over distension of the abdomen.

This may be the consequence of plurality of children, or of an extraordinary quantity of liquor amnii,* or of a combination of ascites and pregnancy. In all such cases, the unusual pressure on the great blood vessels passing through the abdomen, if not the original cause

* The author has repeatedly met with cases where there had been three wash-hand basinsful of liquor amnii.

of the convulsions, must at any rate tend to continue them. It is obvious that the only remedy in such cases, is procuring in the first place the discharge of the liquor amnii.

Premature contractions of the uterus so often occur in the progress of convulsions during the latter months, that they are to be expected, and of course anxiously looked for. Not only ought the state of the uterus to be felt through the parietes of the abdomen on the approach of the fit, but that of the os uteri should be every now and then ascertained after the occurrence of the convulsion. Many cases have fallen under the author's observation, where there had been several violent convulsions, without any impression on the uterus, and yet where a single fit completed the dilatation.

Guided by these principles, the author can declare, that since 1791, he has not lost a patient affected with convulsions in the latter months of pregnancy, in whom he deemed it

necessary to induce artificial delivery, with the exception of a few cases where opiates had been given before his assistance was requested. Those cases occurred previous to the year 1801 (when his opinion on the treatment of convulsions was published in Dr Duncan's Annals), by which publication general practitioners were made acquainted with the injurious effects of opiates.

SECTION II.—CONVULSIONS DURING LABOUR.

CERTAIN symptoms invariably precede the occurrence of convulsions during labour, viz., violent headache, or slight wandering of the mind, as in dreaming, or such tremors, after the infant fills the pelvis, as to shake the bed, or overpowering sleep, with snorting breathing. In some cases, the patient screams out, immediately before the fit, that she cannot see, or that there is a flash of fire before her eyes, or that the room is running round.

Besides these symptoms, Professor Burns says (page 481) “or there may be more fixed and constant pain felt in some part of the spine, and always confined to that, without any pain in the head. In other cases, the first indication is violent pain in the stomach, with insupportable sickness.”

With respect to the former of those symptoms, the author has never witnessed one instance of it in convulsions, either during pregnancy, or during labour. As to the latter symptom, he has often met with it as a precursory symptom in the latter months of pregnancy, but he has not seen a single case where it occurred in the course of the actual labour.

For many years the author could not explain the allegation of some most respectable practitioners, that convulsions may happen during labour, without any previous warning. Thus Dr Ramsbotham says (part ii., page 262), “the seizure is generally unexpected and sudden, instantly exciting the greatest alarm. It happens at a time perhaps when the labour appears to be going on favourably, and to promise a happy termination. But this astounding occurrence at once intervenes to cloud the brightness of the prospect, and to blight all antecedent hopes.”

Dr Collins says (page 199), “this attack

occasionally sets in without the medical attendant being aware of its approach, in consequence of there being no decided premonitory symptoms."

Professor Burns makes a similar remark. He says (page 481), "Convulsions may affect the patient suddenly and severely. She rises to go to stool, and falls down convulsed; or, sitting in her chair, conversing with her attendants, her countenance suddenly alters, and she is seized with a fit; or she has been lying in a sleep, and the nurse is all at once alarmed by the snaking of the bed, and the strong agitation of her patient. Immediately, all is confusion and dismay, and the screams of the females announce that something very terrible has happened."

At last, however, a case occurred which convinced him that the opinion, that convulsions during labour might supervene without previous warning, did not arise from inattentive observation, but from the patient accidentally

or intentionally concealing her feelings. A lady who had married in the thirty-seventh year of her age, and had soon after become pregnant, was put under the author's care. Notwithstanding his earnest remonstrances, she indulged during the whole course of her pregnancy, to the greatest extent, in the use of diluting beverages, which she herself supposed to be harmless, as they consisted of water, and milk and water. He therefore arranged that, on the occurrence of labour, the family surgeon should be in attendance, as he dreaded the effect of the loaded state of the sanguiferous system.

After the first stage of labour had proceeded regularly and satisfactorily, the head of the infant began to press upon the perinæum, and then a violent convulsion took place. While the surgeon was bleeding the patient, who was quite insensible, the author stated to the attendants, that he had never before known an instance of convulsions during labour without some premonitory symptom, such as pain of

the head, &c. The lady's maid instantly mentioned, that her mistress, at the commencement of labour, had told her that she had a violent headache, and had enjoined her to conceal it from the doctor, as she had a great horror at being bled. Accordingly, her orders were faithfully obeyed, for although she was repeatedly asked, during the progress of the labour, if she had any pain of the head, and that she regularly answered in the negative, the maid remained silent.

This case ended fatally. After the bleeding, consciousness instantly returned, and the lady expressed, in strong language, the relief which she then experienced. The infant was, without delay, extracted by the forceps, but another convulsion supervened, and although the bleeding was repeated, the fit ended in death.

Some years after the occurrence of this melancholy case, the author met with a similar instance of prejudice against bleeding, which

seems to him to be still more extraordinary. The lady, towards the completion of her first pregnancy, had been attacked with convulsions before the author was sent for, and had a narrow escape. She afterwards bore two children with ease and safety. During labour of her fourth child, the appearance of her countenance and the oppression of her pulse excited the author's fears, and he therefore requested the attendance of the family surgeon. He repeatedly stated to the patient, that he suspected she had headache, but she always assured him that he was mistaken. From the flushing of her face, &c., however, he insisted on her being bled to the usual extent of fifty ounces by weight. Within ten minutes after the operation, a violent convulsion came on. She was instantly delivered, and had no return of the fit. She afterwards admitted that she had concealed the headache from the dread of being bled.

The exciting causes of convulsions during labour, are, violent or long continued uterine

contractions, or injurious pressure upon the nerves passing through the foramina of the sacrum. A few cases have occurred where agitation of the mind seemed the cause of the fits.

Another opinion on this subject has been proposed by Professor Burns. He says (page 484), " I am inclined to think, that in a majority of instances, the spinal cord is first affected by the state of the uterine nerves, and immediately afterwards the head suffers. A strong predisposition is given to this condition of the nervous system by a bad state of the bowels, and labour seems to bring the matter to a serious crisis." In further illustration of this opinion, he says, in noticing the distinction between epilepsy and eclampsia, " Whilst the symptoms are the same in both diseases, they arise in epilepsy from some organic affection of the brain, or direct irritation of that organ, whilst in eclampsia they rather depend on some sympathetic and temporary cause, very often the uterine irritation acting on the spinal cord, and thence on the brain."

From the author's observations, he feels compelled to dissent from this opinion of his friend, Professor Burns. He has never seen any evidence of a morbid affection of the spinal cord in those cases, as already stated, and certain facts lead him to doubt that uterine irritation can excite convulsions.

During the latter months of pregnancy, it is well known that convulsions happen while the uterus continues quiescent, and during labour fits seldom come on till the first stage be completed; the fair inference, therefore, is, that convulsions are unconnected with uterine irritation. A case which occurred several years ago may be cited, as confirming completely this inference.

A lady was put under the author's charge when nearly at the full period of her third pregnancy, in consequence of having had convulsions during her two former labours. On inquiring into the circumstances of her case, he learned, that upon those occasions, whenever

the head of the infant had filled the pelvis, violent tremors had come on, followed by delirium and convulsions.

When this lady became in labour under the author's care, the dilatation of the os uteri was carefully watched, and as soon as the aperture equalled the diameter of a crown piece, about forty ounces of blood by weight were subtracted by means of the lancet. The pains proceeded rapidly, and the instant the head cleared the uterus, and the face turned into the hollow of the sacrum, frightful tremors supervened, but as three pains completed the delivery, neither insensibility nor convulsions followed.

Within less than two years, this patient was again brought under the author's superintendence, and the same practice was adopted. On that occasion the tremors came on as before, and as the infant was larger than formerly, five or six pains were required to expel the head. During the last two pains, the patient

was evidently in a state of dreaming or slight delirium, but consciousness returned immediately on the birth of the infant.*

As to the treatment in those cases, when convulsions threaten during labour, venesection is to be had recourse to without a moment's delay, and to be carried to the full extent already specified, whatever the constitution of the patient may be. Dr Ramsbotham, in his interesting details, has, with his usual

* The subsequent history of this patient having been communicated to the author, from a source which he believes to be authentic, is added in this note:—

The lady was again pregnant, and on the night previous to setting off for Edinburgh, where she was to have been confined, labour unexpectedly came on. She had the attendance of a very intelligent practitioner, who had been furnished with the author's directions by way of precaution. Notwithstanding his care, the tremors which took place when the infant cleared the uterus, were followed by insensibility and convulsions, which continued for an hour before delivery. The lady however recovered, but some months afterwards sank under the attack of an acute febrile or inflammatory affection.

candour, recorded evidences both of the fatal consequences of drawing too little blood, and of the good effects of copious venesection.* As Dr Burns has well remarked, “there is more danger from taking too little blood than from copious evacuation.”

One of Dr Ramsbotham's cases is particularly striking. The patient had had several fits before the doctor was called in. He had her bled from both arms, and “a large basin full of blood (nearly two pounds) were taken from each orifice.” As no beneficial effect was produced by the bleeding, the woman was, with considerable difficulty, delivered by turning. “Within an hour after delivery, another fit made its appearance, which she did not long survive. (Page 294.)”

Dr Ramsbotham adds, “after a most careful examination of the head, no positive breach of vessel could be detected. The blood vessels

* Part ii., page 272, *et seq.*

of the pia mater were beautifully injected with blood, and a section of the substance of the brain shewed more bloody points than usual; there was also a quantity of tinged serum in the ventricles. The vessels of the cerebellum were likewise unusually distended with blood."

It is impossible to resist the impression, that, if in this case there had been a second bleeding to the same extent as the first, the poor woman might have been saved.

After having subtracted a sufficient quantity of blood, delivery ought to be completed as fast as possible. Indeed, it is not easy to understand upon what principle an opposite practice has been adopted, for it must be quite evident, that every labour throe must momentarily influence the circulation within the cranium, and, of course, tend to keep up the fits. Besides, there is the risk that the violent convulsions may burst the uterus. That this is apt to happen from convulsions during the

latter months of pregnancy, consists with the knowledge of the author, and that it occurred in three of the thirty cases of convulsions during labour in the Dublin Lying-in Hospital, is admitted by Dr Collins.

Accordingly, while the interesting cases which occurred in that hospital, so candidly recorded by Dr Collins, prove incontestably the fatal consequences of delaying delivery, the result of the author's experience establishes unequivocally the importance and utility of extracting the infant by the speediest possible method, for he can solemnly assert, that since the year 1791 he has witnessed only two fatal cases of convulsions during labour.

The first case occurred in July 1798. The patient had had several fits before he was called. He found the breech of the infant in the passage, and taking the pupil who had sent for him aside, he requested him, in a whisper, to go home for the forceps. None of the attendants heard what was said; but the patient, in

whom supersensation had followed the fit, not only heard, but understood it, and instantly exclaimed that no body should touch her with instruments. By and by, another convulsion took place, and the author delivered her of twins ; but the fit continued, and she expired convulsed. The other case was that of the lady who concealed her being affected with headache, as has been already narrated.

Several years ago, the author gave a public proof of the utility of this practice, in a case which occurred in the Edinburgh General Lying-in Hospital. The woman had had four fits before his assistance was procured, and she had twice had fifty ounces of blood subtracted. The head of the infant was partially wedged within the brim of the pelvis. While waiting for the necessary instruments, another fit supervened, accompanied with such appearances of strangulation, that the pupils present involuntarily screamed out that she was gone. The head of the infant was immediately opened, and the woman's re-

covery was so rapid, that at the end of a week she was walking about in the ward.

If any additional argument in favour of this doctrine were required, the author might appeal to the fact admitted or recorded by the most respectable authors, that the infant, expelled naturally where the mother has been convulsed, has usually been still-born.

Where there has been a succession of fits, they do not cease immediately after delivery, and therefore certain means are necessary to secure the safety of the patient.

Generally, the insensibility continues under such circumstances, and therefore the bleeding, either by means of the lancet or by cupping, should be repeated, a large dose of calomel, mixed with sugar, is to be put into the mouth, and the head is to be shaved and completely covered with a blister. After a few hours a powerful purgative enema is to be administered, to promote the operation of the calomel.

As soon as the patient can swallow large doses of camphor, that is, from five to ten grains should be given every two or three hours. This medicine was recommended by the author for cases of this description above thirty years ago, and he can truly declare, that his additional experience has confirmed his opinion of its utility.

From the following observations of Dr Burns, the author is convinced, that his recommendation of camphor in those cases has been misunderstood. He says,—"Camphor has been strongly recommended by Dr Hamilton as the most powerful internal remedy which can be prescribed, but I cannot, from my own observations, say much respecting its virtues as a preventive."

On reference to the *Annals of Medicine*, (vol. v., page 337,) it will be seen, that it was not as a preventive that the author has ever employed it, but as a means of altering that state of the system on which the continuance

of fits after delivery seems to depend, and Dr Burns himself bears testimony to its efficacy in that respect.

Nauseating doses of tartar emetic have been recommended for those cases by Dr Evory Kennedy, and they may, in particular instances, prove serviceable, although cases indicating the use of the medicine have not fallen under the author's notice.

Besides the above means, particular symptoms may require palliation, but the author has met with no patient to whom he deemed it necessary to administer an opiate. He mentions this the more particularly, because it is stated in a late publication,* that in one very alarming case which occurred in the Dublin Lying-in Hospital, where, notwithstanding powerful depleting means, "the disease was becoming more and more violent under their use," the patient was "put freely and rapidly

* Dublin Journal of Medical Science, vol. x., p. 144.

under the influence of opium, and with almost magical effect.”

There must have been some peculiarity in that case which has never fallen under the author's observation. In the *Annals of Medicine* for 1800, he stated (page 340,) his opinion upon this subject in the following words.—“ I can solemnly declare, that no patient to whose assistance I have been called, who had taken a dose of opium previous to my arrival, has recovered, and I have known that medicine given in almost every variety of dose.”

Since that time, one, and only one exception to this practical remark, has fallen under the author's notice, and has been already stated, (page 312.)

SECTION III.—CONVULSIONS AFTER DELIVERY.

Two modifications of this disease occasionally occur after delivery, though there had been no previous threatening of such an affection, and it is intended in this section to communicate the result of the author's observations on those modifications.

Firstly, Of these the modification which the author has more commonly seen, is the following:—The whole person is strongly agitated, as if from an excessive degree of tremor; the countenance, at the same time, is pallid; the eyes are turned up; there is no frothing at the mouth, nor contractions of the muscles of the tongue and lower jaw, and little contortion of the face; the pulse is feeble or imperceptible, and the surface of the whole person is cold. The premonitory symptoms are, sing-

ing of the ears, or swimming of the head, or low muttering delirium. These symptoms arise from loss of blood, and if there have been no apparent hæmorrhagy, it will be found that there is internally an accumulation of blood within the uterus and vagina.

One of the most remarkable cases of this affection which the author has attended, occurred above thirty years ago, and was witnessed by his friend, then his pupil, Dr Hosack, now physician in Perth. The lady, who was the mother of a family, had been safely delivered at half-past one o'clock, of the afternoon. The author's assistance was requested between two and three hours after delivery. He found the patient in a strong convulsion, with a pallid countenance and cold surface. On stating to the midwife that the lady must be flooding, she drew out a cloth which had been applied to the parts, and shewed that it was untinged. The author saw, in a corner of the room, a very large empty earthen basin, which he instantly carried to the bed-side, and introducing his

hand into the vagina, he extracted a large coagulum of blood, which was followed by an immense discharge of congealed blood.

Notwithstanding every means which could be suggested, the convulsions continued at short intervals, for nine or ten hours, when they began to recur less frequently, and the power of deglutition returned, though consciousness seemed suspended for two or three days longer. The patient eventually recovered, but for many weeks her memory was defective, and, even at the end of six months, her articulation was slow and difficult.

This modification of convulsions is so strongly marked by the pallid countenance—the cold surface—the imperceptible pulse, and particularly by the absence of the violent protrusion and retraction of the tongue, that it can scarcely be mistaken by the veriest tyro.

That this modification is a sympathetic affection, arising from loss of blood, cannot be doubt-

ed. It is so commonly the harbinger of death, that recovery in any case is more to be wished for than expected.

In the treatment, the great object to be held in view is to support the living powers, and for this purpose, the most energetic measures are instantly to be adopted.

After removing any accumulations within the uterus or vagina, and guarding against the chance of a recurrence of hæmorrhagy, a powerful opiate enema must be administered, and (on the supposition that the patient cannot swallow) the face and extremities are to be sedulously rubbed with warmed ardent spirits, while a sinapism is to be applied over the region of the stomach.

As soon as the patient can swallow, opiates and cordials, and mild nourishment, according to the circumstances of the individual case, must be carefully administered. Hitherto, in every instance which has fallen under the au-

thor's notice, where consciousness and power of deglutition have been restored, the patient has recovered. But, as already stated, the proportion of recoveries is very inconsiderable.

Secondly, The more uncommon modification of convulsions occurring in the puerperal state, and not preceding delivery, resembles exactly in its phenomena the eclampsia already described. According to the author's experience, the subjects of this affection are individuals of a plethoric or gross habit, and in all the cases which he has seen, the fits were apparently excited by passions of the mind, or irregularities of diet, particularly the abuse of fermented liquors. They were preceded by violent pain of the head. In a few cases they supervened to cramp of the stomach.

For the treatment of such cases, depleting means are alone to be relied upon. The subtraction of a quantity of blood, proportioned to the exigency of the symptoms, the exhibition of a powerful purgative, together with the use of

camphor, and a strict antiphlogistic regimen have proved successful in all cases of this modification which the author has hitherto witnessed. He has not seen one patient sink under this disease, but he has been informed that a few fatal cases have happened in this city within these ten years.

No case of peritonitis after puerperal convulsions, has fallen under the notice of the author.

RUPTURE OF THE UTERUS DURING PREGNANCY AND LABOUR.

WHEN the structure of the gravid uterus at the full period of utero gestation is considered, it must appear surprising that laceration is not a frequent occurrence, because its substance at that period is so spongy, that the finger of the practitioner, if the hand be within the uterus, can be pressed through it with as much facility as through a wetted sponge. The author has been called to several cases, where he found that the proper texture of the uterus had been thus extensively lacerated, but that the organ itself had been kept entire by means of its peritonæal covering. Such cases always terminated fatally.

In consequence of this structure, the uterus is liable to be ruptured, not only from external

and internal mechanical causes, but also from its own inordinate action during the progress of labour. A technical distinction of those cases, therefore, has been made, dividing them into accidental and spontaneous rupture of the uterus.

“ Laceration of the uterus may take place, and, in fact, has happened in every different part of the organ, and in every variety of direction, but its most common seat is in the cervix towards the promontory of the sacrum, and its most ordinary direction is transverse.” Such was the opinion of the author forty-one years ago (*Select Cases of Midwifery*, page 150), founded upon the recorded cases, and upon the testimony of the most respectable practitioners.

Since that time, his experience enables him to state, that the laceration has been found most commonly in the cervix, sometimes in the body, and very rarely in the fundus. Its line of direction has frequently corresponded with the promontory of the sacrum or the crista pubis, but much more frequently in the for-

mer than in the latter. Sometimes the laceration has been towards the side, in a line parallel with, or obliquely towards, the spine.

There are two well authenticated modifications of laceration of which the author has seen no instance. The one, according to Dr Collins, has frequently happened in the Lying-in-Hospital of Dublin. In that modification the rupture had taken place at the junction of the uterus with the vagina. The other modification is admitted to be of very rare occurrence. In it the peritonæal investment of the uterus alone had given way.

According to the observations of the author, when the laceration happens in the transverse direction, more particularly upon the posterior or spinal surface of the uterus, whether in the cervix or body, an immense effusion of blood into the cavity of the abdomen follows ; whereas lacerations in the direction of the long diameter, especially in the cervix, are not productive of that effect.

SECTION I.—ACCIDENTAL RUPTURE OF THE UTERUS.

By this term, it is understood that the laceration is the effect of some mechanical cause, independent of the action of the uterus. It always takes place without any previous warning, and may happen during the latter months of pregnancy, or during labour. It is indicated by sudden severe pain in the belly, aggravated by the slightest movement of the person, or by pressure of the abdomen, followed by sickness, fainting, breathlessness, and more or less rapid sinking of the living powers.

There can be no difficulty in distinguishing rupture of the uterus under such circumstances. The peculiar state of the abdomen, so different from that of its natural condition towards the end of pregnancy, can scarcely be misunderstood. Instead of the defined circumscribed

form of the gravid uterus, there is a most irregular tumefaction of the belly, the pressure upon which occasions excruciating agony.

When the uterus bursts before the commencement of labour, the mechanical cause is a fall or a blow, or a fit of convulsions. This latter cause has been overlooked by systematic writers, but it occurred in the first case which the author met with in practice. The patient, at the time between seven and eight months pregnant, had a sudden convulsion. Before his arrival she was dead, and it was afterwards ascertained that the uterus had been ruptured during the fit.

Accidental rupture of the uterus, during labour, comprehends cases where the laceration is occasioned by the ill-directed efforts of the practitioner to assist the delivery, or by the malposition of the infant. Of the former cause, there are many instances upon record where attempts to alter the position of the infant, or to draw it forward by mechanical means, had

occasioned this unfortunate accident. The latter cause is a more frequent occurrence than has been supposed. Of the many cases of ruptured uterus which the author has witnessed, in much the greater number the arm of the infant had presented.

On the prognosis it is unnecessary to make any extended observations, for it must be unfavourable in every instance. In stating this general proposition, it is admitted that some individuals have recovered after this accident, but considering the small proportion which such cases bear to the fatal ones, the general rule must remain undisputed. Thus, the late Dr Alex. Hamilton (the author's father) met with a single case of recovery, and the author has not been more fortunate. It must appear very extraordinary, too, that in that only case of recovery,* the symptoms seemed more adverse than in any of the fatal cases, with the

* Recorded Select Cases of Midwifery, page 138.

exception of those where the patients were moribund, when his assistance was procured.

Considering the nature of the injury consequent upon the rupture of the uterus, it could scarcely have been anticipated that there could be any difference of opinion respecting the mode of treatment, no other resource than immediate delivery apparently affording any chance of saving the patient.

Although, from the unwillingness of British practitioners, to shock the prejudices of the attendants, by appearing to aggravate the sufferings of a dying woman, many individuals, in whom the uterus had been ruptured, were allowed to expire undelivered, Dr Garthshore was the first modern author of respectability who, upon principle, recommended trusting to nature in such cases.* He says,—

“ From the cases I have adduced, I think it

* London Medical Journal, vol. viii., part iv.

appears clearly, that a child, remaining in the cavity of the abdomen, is so far from being necessarily a fatal accident, that it does not even prevent future pregnancies, and consequent natural births ; nay, we further know, from a case communicated by Dr Steigerthall in the *Philosophical Transactions*, that a woman has lived in good health to the age of ninety-four, with a full grown foetus in her abdomen for the last forty-six years of her life, during which period she bore two other children. But what is still more extraordinary, we have good reason to be assured, that women have not only for a considerable time survived, but even sometimes recovered, by the powers of nature, after the child has escaped through a rupture of the uterus. I am, therefore, much inclined to believe, that when this accident happens at any period of pregnancy previous to the complete dilatation, or rather to the easy dilatability of the natural passages, the mother will have a better chance for life, if left to the resources of nature, assisted by palliative remedies, than by a speedy and violent dilatation

of the parts, and an extraction of a child through a lacerated uterus, which is likely still to suffer more by such an operation in a constitution much weakened, and at that time highly irritable from pain, anxiety and terror.

“ I have myself been called in to ten cases of ruptured uterus, and have before me the account of many others attended by gentlemen of the first abilities and experience. Of these much the greater number were delivered very soon after the rupture took place, but in no instance have I had reason to believe that the mother survived a longer time than she would have done if left entirely to nature ; and were I to presume to conjecture from the cases of of this kind that have occurred to me, I would say hardly so long.”

These observations seem to have made a strong impression upon the minds of two late physicians in London of the highest eminence, viz. Dr Sims and Dr Deuman. The former gentleman was called to a case where there

could be no doubt of the rupture of the uterus, but as the symptoms were not at the moment urgent, he decided on doing nothing. Several weeks passed, during which, according to the account of Professor Davis,* “the patient continued to enjoy a tolerable state of a somewhat broken health.” Portions of the foetus were discharged by stool, and at last peritonæal inflammation supervened to an imprudent over exertion, and proved fatal in four days.

In another case recorded by Dr Davis, communicated by Dr Windsor of Manchester, a similar result followed, where the resources of nature were trusted to, the poor woman having dragged on a miserable existence for above two months, when death put a period to her sufferings.

Dr Denman, after having for nearly half a century advocated the propriety of active inter-

* Principles and Practice of Obstetric Medicine, page 1072.

ference in those alarming cases, lived to change his opinion, although he had for a considerable time retired from practice, and consequently had no additional experience on which to found a practical dictum. In his Introduction, published in 1801, he thus expresses himself:—
“ Besides some few others (viz., cases where patients were saved by delivery) of which I have been informed, or which are recorded, a case has occurred to my very worthy, able and experienced friend, Dr Andrew Douglas, in which, though the uterus was ruptured, he turned the child,—the patient recovered, and afterwards had children, at the birth of one of which I was present.” He adds, “ If no other case had been recorded, this would be of sufficient authority to render it in future the duty of every practitioner to attempt, without delay, to deliver the patient, and bad as her chance certainly would be, to be strenuous in using all the means which art dictates, to extricate her, if possible, from her danger, and to preserve the child.”

But in a subsequent publication he expressed

himself in the following words :*—" When the uterus is ruptured at the time of labour, both reason and experience shew, that the patient has a better chance of recovering, by resigning the case to the natural efforts of the constitution, than by any operation or interposition of art."

On this opinion Dr Dewees has the following comment, in which the author cordially concurs :—" I consider the assertion of Dr Denman to be in opposition both to " reason and experience," to reason, because it would be a natural suggestion, that that woman's chance would be best, from whom many of the causes were removed that would hinder recovery by the delivery of the child, &c.; and to experience, because we have the most unequivocal proofs of recovery upon record, " where the interposition of art was resorted to."†

* Denman's Introduction to the Practice of Midwifery, page 78.

† Dewees, 6th edition, page 536.

Notwithstanding the cases which occurred to Dr Sims and Dr Windsor, the author is strongly impressed with the belief, that where the uterus has burst, nothing but immediate delivery can save the life of the poor woman. Those cases, indeed, suggest to him a very different conclusion from that which Professor Davis has adopted. He says, (page 1074,) that “we should interfere without loss of time, when the circumstances might appear urgent and desperate, and abstain from such interference, when the nature of the symptoms might promise a probable successful issue without it.”

While the author concurs with Professor Davis, that in urgent cases there should be no delay in completing the delivery, he must express his dissent from his advice to “abstain from such interference” in any case whatever, for the less alarming the symptoms may be, the greater is the chance of recovery afforded to the patient. What individual would voluntarily submit to the protraction of a miserable

existence for some weeks, with eventually a painful and tedious death, as the subjects of Dr Sim's and Dr Windsor's inert practice were, according to Dr Davis's own account, doomed to undergo !

If, from the state of the passages, the infant cannot be drawn forward through the usual apertures, the parietes of the abdomen should be divided.

SECTION II.—SPONTANEOUS RUPTURE OF THE UTERUS DURING LABOUR.

By this term, practitioners have understood the rupture of the uterus from its own violent action, in cases where the progress of the infant is resisted, and it is alleged, that this happens under two different combinations of circumstances, viz., where the uterine contractions are excessively rapid and violent, or where, after the first stage of labour is completed, they are continued for an unusual length of time.

To the term spontaneous rupture, the author objected above forty years ago, because it tends to inculcate an erroneous idea of the nature of the case. (*Vide* Select Cases of Midwifery, page 151).

But although this term be, strictly speaking, inaccurate, he considers it to be most impor-

tant to draw the line of distinction between cases of accidenal rupture, that is, rupture from external causes, and cases where the laceration is occasioned by the action of the uterus itself; because in these latter cases there are certain premonitory symptoms which indicate to the practitioner the threatening event, by attention to which the danger may be prevented. He therefore feels it necessary to retain the term, under the explanation now given.

Dr Crantz, in the year 1756, first directed the attention of practitioners to those premonitory symptoms, and considering the state of practical knowledge at that time, it is not wonderful that his enumeration of the symptoms is in some respects imperfect.* His expressions are, “When a woman is threatened, the labour being laborious, with rupture of the uterus, the belly is very prominent and tight, the vagina lengthened, and the orifice of the uterus very

* *Vide* Crantz's Memoir in Puzos Tracte des Accouchemens, page 401.

high, the pains are strong, leave little interval, and do not advance the delivery.”

Dr Andrew Douglas of London, in recording an interesting case of rupture of the uterus* (that of Mrs Manning), described more accurately the premonitory symptoms. In reference to Dr Douglas's Observations, the author ventured, in 1795, to allege (Select Cases of Midwifery, page 152), that they were not sufficiently precise to direct the appropriate practice, and that the following circumstances more clearly point out the threatening accident.

“ *First*, The liquor amnii is prematurely discharged. *Secondly*, The os uteri remains remarkably rigid. *Thirdly*, The uterine contractions are very violent and frequent; and, *lastly*, the patient complains of a most excruciating pain in some part of the uterus during the interval between every labour throe. This

* Observations on the Rupture of the Gravid Uterus, by Andrew Douglas, M. D., London, 1789, page 96.

pain differs from that often felt in the lumbar region in the second stage of labour, in being peculiarly agonizing."

A few months after these Observations were published, a case of laborious labour, already referred to (page 151), occurred in the Edinburgh General Lying-in Hospital, where rupture of the uterus took place without the previous discharge of the liquor amnii. But the circumstances were so peculiar as to render the case perhaps a solitary exception to the general rule. In the early part of the labour, there was a discharge of watery fluid per vaginam, followed by such violent and rapid contractions of the uterus, that, considering the extreme deformity of the pelvis, the author was impressed with the dread of rupture. This he stated in the presence of above forty witnesses, and within a quarter of an hour the accident actually happened. It was found that the membranes of the ovum had continued entire, a circumstance which produced different phenomena from those usually met with in cases of actual rupture.

The prominence and tension of the abdomen in those cases alluded to by Crantz, are the effects of the violent degree of contraction of the uterus, and the agonizing pain felt in one part of the uterus, during the short intervals between the labour throes, seems to be owing to some of the uterine fibres remaining contracted, after the others have become relaxed.

In women who have had a large family, a similar pain, though in a much less degree, occasionally occurs, and it never fails to excite a little anxiety in the mind of the author. It appears to be owing to the same cause, viz., irregular contraction of the uterine fibres, but being unaccompanied with the two important circumstances of violent and rapid labour throes, and resistance to the progress of the infant, it does not portend the same danger. It is sometimes relieved by firm compression of the abdomen, by means of a roller.

Several of the most respectable practitioners have, in strong language, asserted, that there are

no symptoms indicating the probable rupture of the uterus, during labour, from its own inordinate action. Thus Mons. Baudelocque, in reference to the opinion of Dr Crantz, expresses himself as follows,—“ Mais ces symptomes sent trop incertains pour que nous puissions les prendre pour règle. La rupture de la matrice a eu lieu nombre de fois sans être précédée d’aucun d’eux, et ne s’est pas faite en d’autres cas, où leur réunion sembloit annoncer qu’elle étoit inévitable. En les prenant pour guides, souvent on épieteroit sur les droits de la nature, on entraverait sa marche en opérant un accouchement qu’elle auroit pu terminer sans inconviniens, ou avec beaucoup moins que nous ne l’eussions fait nous mêmes ; et l’on ne pourroit se flatter, en aucun cas, d’avoir prévenu la rupture dont il s’agit.” Par. 2287.

Dr Ramsbotham says, “ rupture of the uterus always takes place suddenly, and generally without any previous warning.*

* Ramsbotham, part i., page 378.

Dr Dewees says (page 541), after detailing Crantz's opinion, " Did the signs just detailed portend a rupture of the uterus, every laborious labour would be threatened with one—every symptom enumerated above is almost the necessary effect of the tonic action of the uterus after the evacuation of the waters; yet, fortunately for suffering woman, this accident is of comparatively rare occurrence."

On the other hand, both Professor Burns* and Professor Davis admit, that there are premonitory symptoms which mark the probability of this alarming casualty.

This discrepancy of opinion upon a practical subject of so much importance, can only be explained, upon the supposition that cases of accidental have been confounded with those of spontaneous rupture of the uterus.

* Professor Burns, page 492.—Professor Davis, page 1069.

It is also to be noticed, that the symptoms indicating the spontaneous rupture of the uterus, are more distinctly marked than those which follow the accidental rupture. Thus, in addition to the signs of rupture enumerated, (page 346,) the patient screams out that something has given way within her, and expresses her conviction that the rent must have been heard by the attendants, and the labour throes, which had been unremitting, suddenly cease, or become extremely trifling or irregular, a bloody discharge commonly, though not always, issues from the vagina, and the advancing part of the infant recedes, though sometimes the pain which ruptures the uterus partially protrudes the infant.

As this untoward accident has happened under various combinations of circumstances, viz., during the first stage of labour, where the os uteri has been most unyielding, and during the second stage, where the infant was in a wrong position, or where there was disproportion between it and the apertures from the

several obstacles already enumerated, it is not surprising that the cause of rupture has been explained on different and contradictory principles by practitioners of high respectability.

There can be no doubt, that in all cases of spontaneous rupture, two agents concur in producing that effect, viz., violent or long continued uterine contractions, and unusual resistance, and the probability is, that the uterus, under such circumstances, bursts at its own weakest part. If the substance of the uterus were injured by its pressure against the promontory of the sacrum, or against the crista pubis, the line of laceration should correspond with those resisting points. But in the case recorded, page 151 of this volume, while there must have been most injurious pressure, both from the projecting sacrum and the crista pubis, the laceration was to the left side of the uterus, and in a longitudinal direction, too, where there was no pressure whatever. In many other cases, it has been found, that the laceration was not in the direction of the resisting part.

When the rupture has supervened to long continued labour, perhaps the texture of the uterus is altered by the injurious pressure, and this seems to have happened in several of the fatal cases which occurred in the Lying-in Hospital of Dublin, where, as Dr Collins has remarked, there had been great mismanagement previous to the poor woman having been sent to the hospital.

For the prevention of spontaneous rupture, ample bleeding, followed by the use of opiates, and the removal of any of the obstacles to the progress of the infant, and, on some occasions, immediate or speedy delivery have been recommended.*

Many years ago, the author adopted a simpler and safer mode of practice, viz., suspending the uterine contractions by exciting alarm

* Professor Davis, page 1071. Dr Andrew Douglas's Observations, page 97.

in the mind of the patient, and he can talk confidently of the efficacy of this plan. Of course, after the labour throes have been arrested, his endeavours have always been directed to the means of facilitating the future progress of the delivery.

APPENDIX.

No. I.

CASES OF CICATRIX OF THE VAGINA, IN CONSEQUENCE OF LABORIOUS LABOUR.

I. IN the year 1794, the late Dr Skene of Aberdeen requested the opinion of the author's father on the case of a lady to whom Dr Skene had been called six weeks after her delivery. From the history, it appeared that, after long continued and severe sufferings, a putrid infant had been expelled by the natural efforts, and that inflammation and suppuration of the passages had followed. Dr Skene found a callous projection in the perinæum preventing the patient from sitting, and a thick indurated cicatrix about the middle of the vagina, so much contracting that canal, that he could with difficulty pass the point of his fore finger into it.

By the repeated application of leeches, and by the use of mercurial frictions, the callosity of the perinæum was removed, but the indurated contraction of the vagina continued, notwithstanding which, the patient,

in the course of a few months, again became pregnant. This circumstance led to a second consultation, viz., as to the mode of treatment to be adopted in regard to her delivery. The advice given was, to draw blood from the arm to the extent of thirty or forty ounces after the first stage of labour should be completed, and to give time. The practice proved so successful, that the lady was safely delivered of a living child, and Dr Skene, in communicating the event, wrote that he had never left a lying-in patient with more heartfelt satisfaction than on that occasion.

II. Twelve years after that period, the author witnessed a case of a similar nature, in which, however, the result was very different. The poor woman had had her first child six years before in the town of Ayr, and had been allowed to be some days in labour. At last a putrid infant had been expelled, followed by violent and extensive inflammation of the passages. After a lapse of above five years, she again conceived, and when in labour was attended by Dr Murdoch, formerly one of the author's private pupils, and one or two students. An attempt to deliver by the crotchet having been unsuccessful, the author's aid was requested. He found a callous cicatrix of the thickness of one's finger, extending from one tuberosity of the ischium to the other, and so narrowing the outlet of the pelvis, that a half-crown piece could not have been introduced. On dividing this with a scalpel, the delivery was very rapidly accomplished, but it was too late to save the poor woman.

The two following cases occurred in the practice of Dr John Moir, assistant physician to the Edinburgh General Lying-in Hospital.

III. Mrs Lawson, about 28 years of age, lay in some time ago of her first child in Glasgow, and, according to her own account, had a very severe and tedious time, and recovered after a hairbreadth escape. She became in labour of her second child on the 30th March 1835, and was attended by Mr Ritchie, one of the pupils of the Edinburgh General Lying-in Hospital.

At first the labour went on favourably, but when the head of the infant came in contact with the perinæum, it remained immovably wedged for above two hours, notwithstanding copious venesection, and the recurrence of strong uterine contractions every three minutes.

Dr John Moir's assistance was then requested, and he ascertained that the impediment was occasioned by a strong callous band about the thickness of one's little finger, stretching across the posterior part of the vagina, situated from about three quarters of an inch to an inch above the external parts. This was evidently a cicatrix, occasioned by the effects of the former delivery. On cutting through this callosity during the interval between two pains, the patient was in a very few minutes delivered of a living infant. She ex-

perienced no pain from the operation, and the scalpel was scarcely tinged with blood. In extracting the placenta, it was found that the ends of the divided cicatrix were at least two inches asunder. The patient recovered without an untoward symptom.

IV. Mrs Alexander, apparently thirty years of age, became in labour of her first child on Wednesday 11th May 1835, about six o'clock P.M., and continued to have uterine contractions, without interruption, till Saturday morning, May 14th, when about seven o'clock, A.M., the head of the infant was born. Nearly six hours were allowed to elapse before the shoulders were expelled, and the birth of a dead infant was completed.

For many weeks she continued in a very alarming state, evidently from inflammation and sloughing of the passages, and from a short time after delivery she had an involuntary discharge of urine.

When Dr Moir first saw this patient, three months after her delivery, the symptoms were incontinence of urine, great tenderness from excoriation of the parts, and such a sense of pressure and bearing down on attempting any exertion in the erect posture, that she was obliged to remain almost constantly in bed.

At Dr Moir's request, the author visited her, and on examining the state of the passages he found that, with-

in an inch of the external orifice, the vagina was so contracted, in consequence of a thick callous cicatrix in the form of a ring, that the finger could not be passed through it. This impediment rendered it impossible to ascertain either the seat or the extent of the opening into the bladder.

The use of sponge-tents and suitable means for relieving the external excoriations were recommended. As her general health gradually became much improved, she neglected those means, and it was at last discovered that she was again in the family way,—a fact which explained the alleviation of the symptoms.

Early on the 8th May 1836, labour pains having come on, she sent for a midwife, and, very unexpectedly, within two hours, was safely delivered of a living infant, without any extraordinary aid.

Ten days after her delivery, Dr Moir was permitted to examine the state of the vagina, and he had the satisfaction to find every thing natural, excepting a small opening into the neck of the bladder. Notwithstanding this, she could retain her urine for about two hours at a time, and therefore she declined submitting to any means for the obliteration of this opening. She was visited upon the 10th day of June, when she appeared in good general health, and was suckling a thriving baby.

No. II.

COPY OF LETTER PROPOSING A SUBSTITUTE FOR THE
CÆSAREAN OPERATION.

The subjoined letter, addressed to the author in 1805, relates to a proposed substitute for the cæsarean operation, which is so similar to that lately suggested by Professor Davis of the London University, that it has been deemed necessary to publish a fac-simile in order to establish its authenticity.

As the fac-simile is admirably executed by Messrs Forrester, lithographers of this city, and bears internal marks of the original being genuine, it is perhaps unnecessary to add, that the real letter is in the possession of the author, and is open to public inspection.

No. III.

CASES OF CONVULSIONS REFERRED TO, P. 314.

*First Case, originally published in Dr Duncan's
Medical Annals, vol. 5, p. 313.*

Mrs M., aged 25, of a melancholic temperament, fully seven months advanced in her first pregnancy, having been seized with violent convulsions at eight o'clock A. M. of December 24th, 1799, was visited by Dr Fitzgerald of Virginia, then my annual pupil, and myself, about an hour after the first attack. We found her nearly insensible, with an oppressed slow pulse, the pupils of the eyes greatly dilated, the lower extremities much swelled from anasarca, and without any symptoms whatever of approaching labour. On inquiry, we learned, that her limbs had been swelled for above a fortnight, and that on the day preceding our visit, she had complained much of headache. During the night she had been restless and sick. Her bowels had for some weeks been rather constipated.

A vein in the arm was immediately opened, and a sufficient plug forced into the mouth. After six or eight ounces of blood had been discharged, a violent fit (the third from the beginning) came on, and continued for several minutes; after which, it was perceived that the superior extremities had become so

swelled, that the blood almost ceased to flow. Several leeches were now applied to the temple, and the bowels were freely opened by a glyster. Above an hour elapsed without any return of the convulsions, during which time a considerable quantity of blood was discharged from the temple. But on the recurrence of the fit, the anasarca was extended to the face, which swelled it prodigiously, and completely closed the bites of the leeches. The whole head was now shaved, and at three o'clock P. M. was covered by a large blister.

From this period, the fits recurred at short intervals, and during the time of their remission, which scarcely ever exceeded half an hour, great restlessness and stertorous breathing took place, together with that appearance of the countenance which occurs in apoplexy. No change happened till about three o'clock A. M. of the 25th, when the blister began to discharge freely, and the restlessness and stertor ceased. The patient swallowed now, from time to time, a little gruel, and no fit recurred for four or five hours.

When Dr Fitzgerald and I visited her early in the morning of the 25th, we found her somewhat more sensible to external impressions; but the pupils of the eyes were still greatly dilated, the pulse slow, irregular and oppressed, and the fits were again beginning to recur at shorter intervals. A fresh blister was applied to the head, and ten drops of the saturated tincture of

digitalis were directed to be given every half hour, till a copious discharge of urine should be produced.

Although the fits recurred occasionally at irregular intervals during the whole forenoon, the medicine was taken with much punctuality for eight hours, when great sickness and vomiting were excited, and a prodigious quantity of urine was passed involuntarily. From this time the fits entirely ceased, the œdematous swelling of the face and upper extremities subsided, and the patient began to be able to take weak nourishment, and to answer any questions that were put to her. Pain in her head, and inability to move her right thigh, leg and foot, were the only circumstances she complained of. Four ounces of the camphorated julep (of the strength of ℥ij of camphor to the pound) were ordered to be given every four hours while awake. During the night she repeatedly desired to be raised to make water, and had occasionally very sound sleep.

On the morning of the 26th she had a powerful dose of jalap and calomel, which produced, in the course of the day, two or three copious discharges by stool.

She passed the following day without any untoward symptoms; but, on the 28th, the pain in the head appeared to be aggravated, although a regular discharge, by means of strong epispastic ointment, had been kept up. The swelling in the lower extremities also seemed

increased, and the pulse was rather oppressed, and the eyes were dull. The use of the camphor was laid aside, and the tincture of digitalis was directed to be given in the dose of ten drops every hour. This was continued till evening, by which time repeated copious discharges of urine had taken place; the pain in the head had abated, and the swelling of the lower extremities had decreased.

For a few days, she had regularly a dose of camphor at bed time, and her convalescence went on progressively.

At the end of a fortnight, symptoms of labour came on, and she was delivered of a male child that had been dead apparently for a considerable time.

Her lying-in was not attended by any uncommon symptom; but for several weeks after delivery, she complained much of occasional vertigo and pain in the head. A course of bark and valerian, with country air and exercise, were prescribed, and, in the month of August last (1800), the patient was in her ordinary state of health.

Second Case of Convulsions during Pregnancy.

Mrs A. B., in the 21st year of her age, supposed to be eight months pregnant of her first child, awoke at five o'clock A. M. of October 31st, 1832, complaining of violent headache, and on the supposition that it was rheumatic, had recourse to some external warm application. Within four hours, on getting out of bed for some purpose, she fell down in a state of insensibility, and on being taken up, it was observed that there had been a considerable discharge of water. It had been remarked by the attendants for several days before the attack, that although apparently in her ordinary state of health, her face and the upper parts of her person were swollen in the morning.

When the author saw this patient within an hour after the first attack, he found her quite incoherent and restless, with the face pallid, the surface cold, and the pulse feeble, fluttering, and so frequent, that it could not be numbered. Before he could learn any thing of the history of the case, a strong convulsion supervened, attended with bloody frothing at the mouth.

Surgical aid was instantly obtained, and a vein of the right arm was opened with a large orifice, but the blood

only flowed in drops till another convulsion came on, when a few ounces were discharged. A vein in the left arm was next opened, with the same result, but as the convulsions recurred very frequently, the discharge of about thirty ounces of blood from both arms was procured. In the meanwhile, a large sinapism was applied to the nape of the neck, and kept on for about an hour.

As the convulsions continued to recur, although the pulse remained as feeble as ever, and the veins could not be made to rise, the scarificator and cupping glasses were applied to the left temple (it having been found impracticable to bleed the jugular vein), and a few ounces of blood were in this way discharged.

The head was then shaved, and the scalp was completely covered with a sinapism, and this was not removed for at least three hours and a-half. Two minims of croton oil were with difficulty swallowed, though diluted with no more than two drachms of syrup, but in ten minutes, a violent fit of retching occurred, by which some mouthful of tough phlegm were ejected, and once or twice afterwards, a small quantity of fluid, tinged with bile, was vomited.

For three hours from this date, no convulsions recurred, and there was evidently a partial return of sensibility, though without any change in the state of the surface or of the pulse, the former being cold, and the latter indistinct.

The convulsions now returned, and in the short interval between them, the breathing was hurried, the inspirations being from thirty-six to forty in a minute, and the air expelled from the lungs was perceptibly cold. During those short intervals between the fits, there were sometimes distressed groaning, and sometimes violent grinding of the teeth.

Thus the symptoms proceeded till five P.M., when, during a strong convulsion, the uterus was found to contract. It had been previously ascertained that the os tinæ was still closed. Although from this period the convulsions recurred almost every quarter of an hour, the uterus remained quiescent.

About seven (P.M.) however, uterine contractions came on, sometimes accompanied with convulsions, and sometimes independent of them, and the labour proceeded so rapidly, that the patient was delivered at eight (P.M.) There were three turns of the navel string round the neck of the infant, which was a male, and was still born, and could not be recovered, although there was at first pulsation in the cord, but no action of the heart could be perceived. The placenta readily followed, and a free discharge of blood from the uterus was encouraged by the application of a bottle of hot water to the lower part of the belly.

The only change which followed delivery for some hours was, an increased heat of the surface, so that, by

pressure, the superficial veins could be made to swell. But the pulse was equally imperceptible, the breathing frequent and laborious, and the convulsions were still followed by distressing loud groaning.

No evacuation, either from the bowels or from the bladder, had taken place.

About four (A.M.), of the first of November, the pulse, at the wrists, became very perceptible, and a profuse sweat over the whole surface broke out, with flushing of the face, but there was no mitigation of the symptoms, and the pulse gradually became more feeble, the moaning was almost incessant, and the convulsions recurred every quarter of an hour.

The phenomena of the fits now varied considerably. Sometimes the whole muscles which move the body and limbs, were convulsed, sometimes only the lower or upper extremities. On other occasions, the respiratory muscles, including those of the face, were alone effected. It also repeatedly happened that the right arm and the left leg were the only convulsed parts, excepting the muscles of the lower jaw, which were affected during every fit, and often during the intervals. A copious flow of saliva accompanied many of the fits, and several hours elapsed before there was any marked dilatation of the pupils.

At ten (A. M.,) the symptoms were unchanged, pulse

150, breathing 42; and it was found that the abdomen was much distended with flatus. A foetid enema was now administered, by which a copious alvine discharge was procured.

From this period the convulsions ceased, the breathing became gradually less frequent, the groaning decreasing in proportion, occasional discharges of flatus from the bowels were heard, the pulse could be numbered, and the patient seemed to be in a profound natural sleep. Occasionally, from the movements of her lips, it was supposed that she required drink, and a little diluted spir. æther. nitrosi was given, which was swallowed, though with very great difficulty.

At half-past one (A. M.) twelve grains of calomel, mixed with sugar, were put into the mouth.

Little variation in the symptoms was observed till between seven and eight o'clock (P. M.) when there was a profuse discharge of urine. This was followed by a very copious, loose and foetid evacuation from the bowels, with such manifest relief, that a tea-spoonful of the spt. æther. nitrosi properly diluted, was swallowed with comparative ease. There being much heat of the surface, with flushed face, and turgid superficial veins, the upper parts of the person were now sponged with tepid water and vinegar, combined with a small proportion of brandy, and this operation was followed by natural sleep, which continued for several hours.

About six (A. M.) of the 2d, in consequence of considerable restlessness, the state of the bladder was examined, and about a quart of urine was drawn off by the catheter, and a large dose of camphor was given, after which the patient relapsed into a quiet sleep.

When visited at ten (A. M.) the pulse was found to be distinct though frequent, the heat of the skin and the breathing natural, the sensibility so much improved, that the tongue was put out when required, and the power of deglutition was so much restored, that the drinks administered were readily swallowed. An attempt had been made in the course of the morning to give some panada, but it seemed to be nauseated.

The foetid enema was now repeated, and the camphor was directed to be given every two hours while awake. Occasional doses of a solution of the carbonate of potass. with the spt. æther. nitros, and small proportions of weak chicken broth were advised.

Under this treatment, the convalescence progressed steadily, though slowly.

As the tongue had been bit through on the right side, indistinctness of articulation was at first attributed to the inflammation and ulceration which followed, but after the separation of the slough, and the healing of the part, slowness and difficulty of articulation con-

tinued, and there was an evident impaired state of memory and of vision.

Within about a fortnight from this date, the bodily health began to improve, and the lady was at the end of six weeks enabled to take a daily airing in her carriage.

Several weeks, however, elapsed before she could articulate readily, and a still longer time before she could read even large print. It appeared that her memory improved quicker than her vision, and therefore, for the purpose of accelerating the restoration of that important sense, a course of electricity, in the form of the electric aura, was recommended, and it was productive of the best result.

This lady left Edinburgh towards the latter end of March, in perfect health, having menstruated regularly three different times. She has since that time been safely delivered of two children.

No. IV.

WHEN Dr Evory Kennedy's work on Obstetric Auscultation appeared, the author requested two of his old pupils, now engaged in extensive practice, Dr Sidey and Dr Moir, to attend particularly to the action of the foetal heart previous to breathing.

On the 26th October (1836), he sent a note to each of those gentlemen, requesting to know the result of their investigation on this subject, and the following are the answers which he received :—

2, HERIOT ROW, EDINBURGH,
27th October 1836.

DEAR SIR,—In answer to your note of last night, in regard to the action of the foetal heart before breathing is established, I beg to state, that since you directed my attention particularly to the subject, I have had an opportunity of ascertaining, in eight cases, that the action of the heart is only 60 or under it in a minute, before the act of respiration is established.

In four of the eight cases, I had to deliver the patient by the operation of turning. During the absence of the labour pains, I had an opportunity of deliberately counting the pulsations of the cord, and of contrasting

them with those of the iliac arteries of the mother, which I felt distinctly through the parietes of the uterus.

I am,

Yours very truly,

(Signed) CHARLES SIDEY.

5, GEORGE STREET,
26th October 1836.

MY DEAR SIR,—In reply to your letter of this date, I beg leave to say, that, till the publication of Dr Every Kennedy's Book on Obstetrical Auscultation, I considered that the slow action of the foetal heart, in those cases where the infant does not breathe upon birth though the circulation continues, had been a fact universally acknowledged by the practical part of the profession.

On reading Dr Kennedy's publication, my attention was very particularly directed to this subject; and I can with great truth assure you, that my observations since that time have invariably confirmed the fact, that the pulsations of the heart are only about 60 in those cases, as mentioned in my former communication to you, and recorded in the first part of your work, page 312.

I am,

Dear Sir,

Yours very truly,

(Signed) JOHN MOIR.

DR HAMILTON.

2, HERIOT ROW, EDINBURGH,
October 29, 1836.

MY DEAR SIR,—Since I wrote to you on the 27th, I have had two opportunities of ascertaining the action of the foetal heart previous to the commencement of breathing. The one occurred last night, and the other this morning.

In the former case, I felt the cord of the infant round its neck whenever the head filled the pelvis, and pressing my finger upon it, I repeatedly counted the pulsations, and I found them to be rather under sixty in the minute. The infant whom I assisted into the world this morning, did not breath for some little time, but the arteries of the navel string beat distinctly. The number of pulsations in the minute varied from fifty-six to sixty.

I ever am,

My dear Sir,

Yours truly

(Signed) CHARLES SIDEY.



No. V.

EXPLANATION OF THE DIAGRAMS OF DEFECTIVE AND
DEFORMED Pelves IN THE AUTHOR'S COLLECTION.

THESE diagrams have been executed with great care by a very talented artist here, Mr Surenne. They are delineated by the particular directions of the author, in such a point of view, as to convey to the practitioner an accurate notion of the shape and of the dimensions of the apertures at the brim and the outlet. The plates have been carefully lithographed by Mr Hulmandel of London, and have by him been reduced to one-third of the natural size.

In estimating the dimensions of the apertures of the pelvis in the skeleton, and comparing them with those of the recent subject, it is to be specially remarked, *firstly*, that the shrinking of the bones in their dried state does not enlarge the apertures, because the contraction of the ligaments of the sacro iliac synchondrosis and symphysis pubis preserves the proportions; and, *secondly*, that in the living subject the coverings of those bones must have reduced the actual extent of the apertures by at least one-fourth of an inch.

Perhaps it may be supposed that, during labour, the

parts interposed between the head of the infant and the bones of the pelvis occupy more than one-eighth of an inch. That they do so is admitted, but experience proves that they may be compressed with safety into that space.

In the following explanation of the plates, the actual extent of the standard diameters in the skeleton is specified, and the dimensions of any other part may be readily understood, by multiplying the distance between different parts of the plate, by three. In order to estimate the actual aperture in the living subject, a fourth of an inch must be subtracted from the product.

EXPLANATION OF THE PLATES.

PLATE I.

Figure 1st represents the apertures of a pelvis at the brim, which, without actual deformity of the bones, fall under the ordinary proportions.

A. B.	$3\frac{7}{16}$	Inches.
C. D.	$5\frac{3}{16}$	„
E. F.	$5\frac{1}{16}$	„

Figure 2d represents the brim of a distorted pelvis, the space at the left side of the promontory of the sacrum being considerably less than that on the right side.

A. B.	$3\frac{7}{16}$	Inches.
C. D.	$5\frac{5}{16}$	„
E. F.	$4\frac{7}{8}$	„
G. H.	$4\frac{1}{16}$	„
A. H.	$2\frac{5}{8}$	„
A. E.	$3\frac{1}{4}$	„

Pl 1

Fig 1

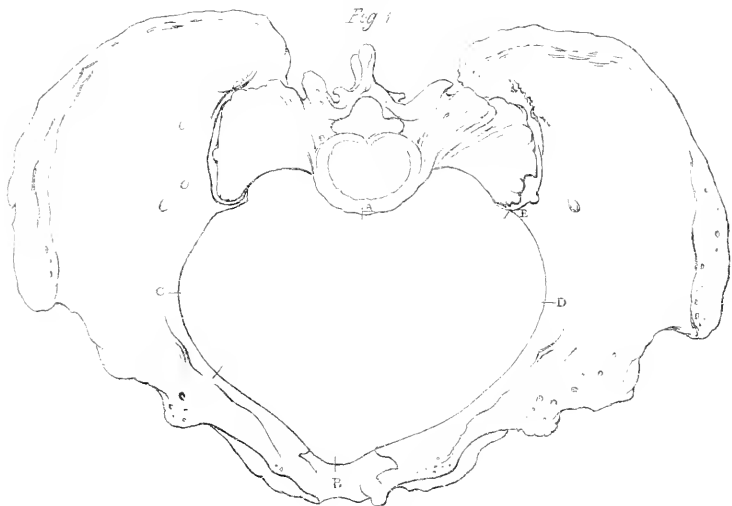


Fig 2



Entomandera luteoparva

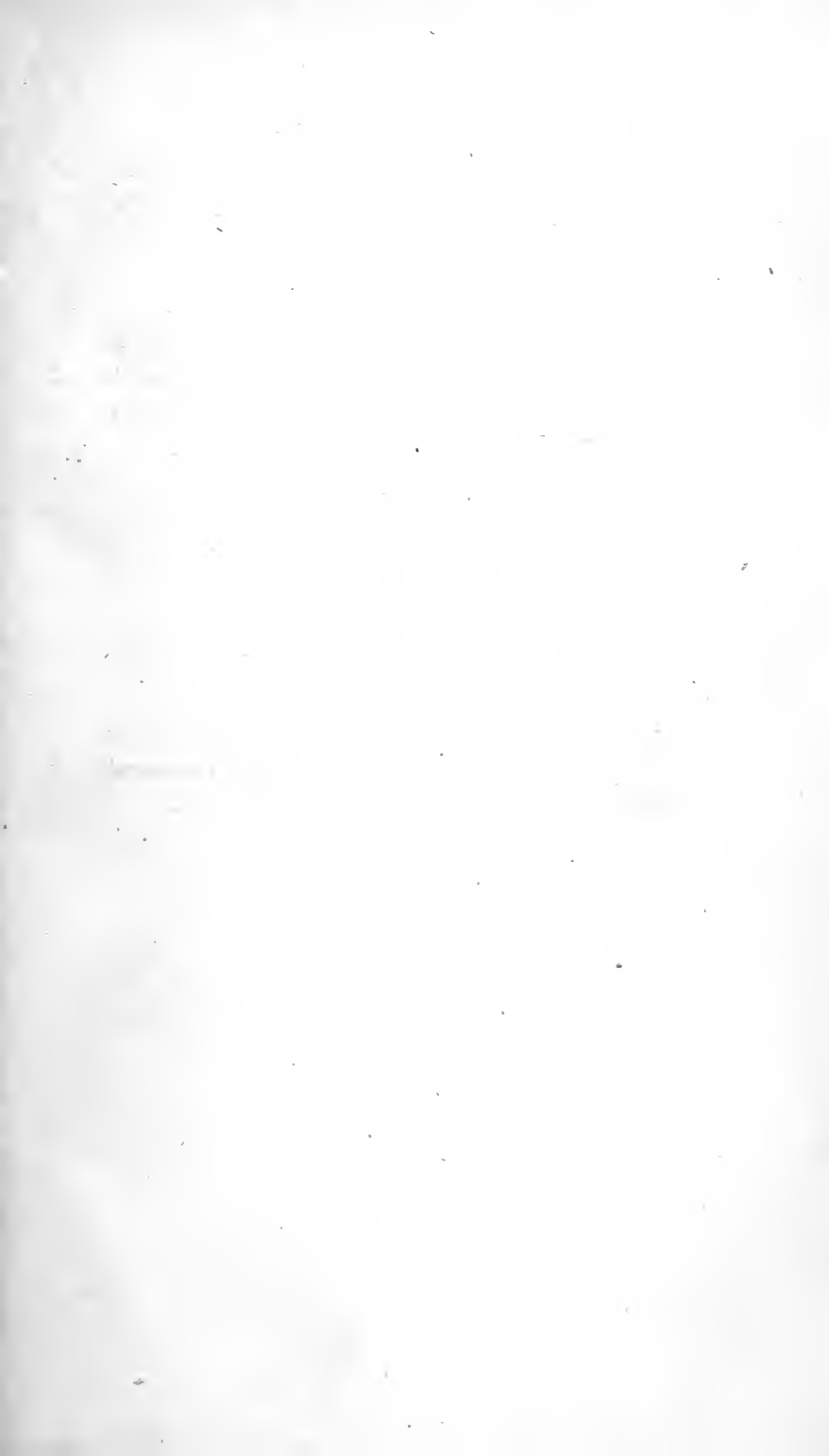


PLATE II.

Figure 1st represents the brim of a pelvis, in which, without any disease of the bones, the aperture on the right side of the promontory of the sacrum is narrower than that on the left.

A. B.	$3\frac{7}{16}$	Inches.
C. D.	$4\frac{3}{16}$	„
E. F.	$4\frac{3}{16}$	„
G. H.	$4\frac{5}{8}$	„
A. H.	$2\frac{6}{8}$	„

Figure 2d represents the brim of a pelvis of an adult, all the bones of which are naturally smaller than usual, without any deformity.

A. B.	$3\frac{9}{16}$	Inches.
C. D.	$4\frac{3}{8}$	„
E. F.	$4\frac{3}{8}$	„

Pl II

Fig 1



Fig 2



PLATE III.

Figure 1st represents the brim of a distorted pelvis, through which it is obvious that a living infant of the ordinary size could not be passed.

A. B.	$3\frac{1}{4}$	Inches.
C. D.	$5\frac{7}{16}$	„
E. F.	4	„
G. H.	$3\frac{1}{4}$	„
A. H.	2	„
A. F.	$2\frac{3}{4}$	„

Figure 2d represents the outlet of the same pelvis.

I. K.	3	Inches.
L. M.	3	„
N. O.	$1\frac{3}{4}$	„

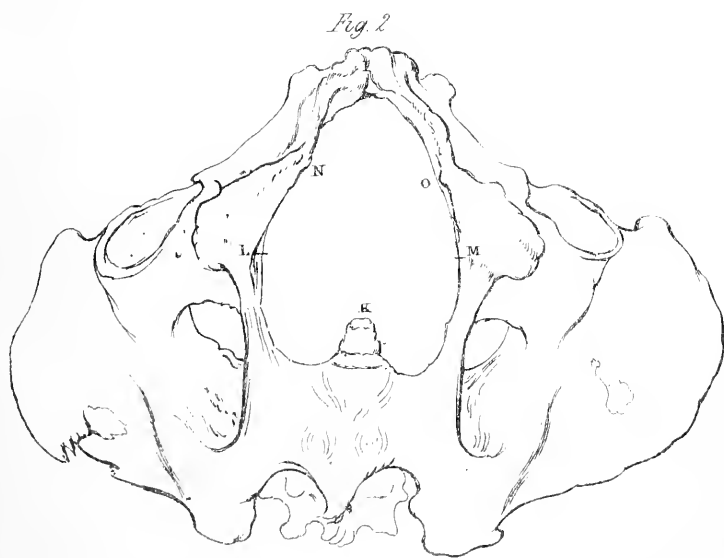


Fig. 1



Fig. 2

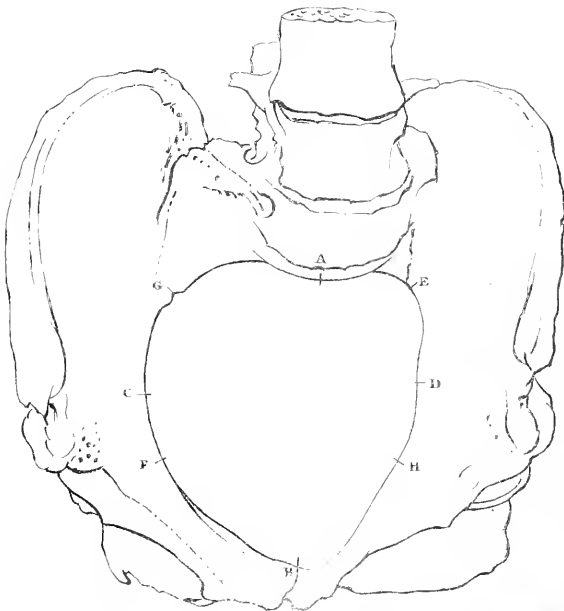


PLATE IV.

Figure 1st represents a slight deficiency of space at the brim of the pelvis.

A. B.	$3\frac{3}{4}$	Inches.
C. D.	$4\frac{1\frac{5}{6}}{16}$	„
E. F.	$4\frac{5}{16}$	„

Figure 2d.—This represents the brim of a pelvis which the author saw in the year 1835, in the possession of Messrs Pravaz and Guerin, at their magnificent establishment for the cure of curvature of the spine, at the Chateau de la Muette at Passy, near Paris.

On the right side of the promontory of the sacrum, the aperture of the pelvis is natural; but on the left side, the linea innominatum forms almost a straight line.

As the author could obtain no information respecting the individual from whom this pelvis had been obtained, he could only form a conjecture respecting the cause of this singular malformation. He supposed that the woman had, after attaining adult age, been subjected to the amputation of the right lower extremity, and that in consequence of throwing the weight of the body, in the ordinary exertions of life, on the remain-

ing limb, the sacral extremity of the innominatum had been gradually absorbed, as there was a distinct ankylosis between the sacrum and ilium.

Accordingly, on directing a portion of the sacral extremity of the innominatum of an ordinary sized pelvis to be sawed off, he formed a tolerable imitation of the preparation belonging to Messrs Pravaz and Guerin, and from that the drawing was made.

A. B.	$4\frac{1}{4}$	Inches.
C. D.	$4\frac{1}{8}$	„
E. F.	$4\frac{3}{8}$	„
G. H.	4	„
A. H.	$2\frac{13}{16}$	„
A. F.	$3\frac{7}{8}$	„

PLATE V.

Figure 1st.—This represents the brim of the pelvis in a skeleton in the author's collection, the spine, thighs, and legs of which are considerably deformed.

A. B. 3 Inches.

C. D. $5\frac{3}{16}$ „

E. F. 5 „

G. H. $4\frac{1}{4}$ „

A. E. 4 „

A. H. $2\frac{3}{8}$ „

Figure 2d represents the outlet of the same pelvis.

I. K. $3\frac{5}{16}$ Inches.

L. M. $3\frac{5}{16}$ „

H. O. 3 „

PLATE VI.

Figure 1st represents the brim of the pelvis of a skeleton in the author's collection, which formerly belonged to the late Dr Charles Stewart, and which was presented to the author by his friend Dr Dyer. Dr Stewart repeatedly informed the author, that the individual from whom the skeleton had been obtained, had had the Cæsarean operation unsuccessfully performed upon her.

A. B.	$2\frac{1}{16}$	Inches.
C. D.	$5\frac{1}{4}$	„
E. F.	1.	„
G. H.	$1\frac{1}{4}$	„

Figure 2d.—The outlet of the same pelvis.

I. K.	$2\frac{11}{16}$	Inches.
L. M.	$3\frac{3}{4}$	„

Fig. 1.

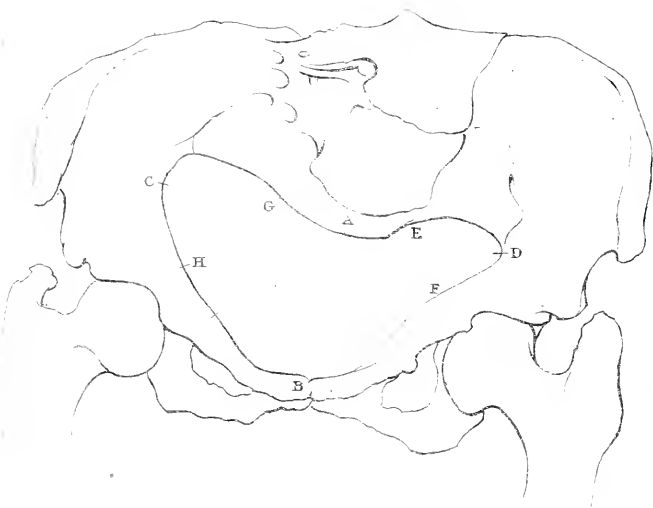
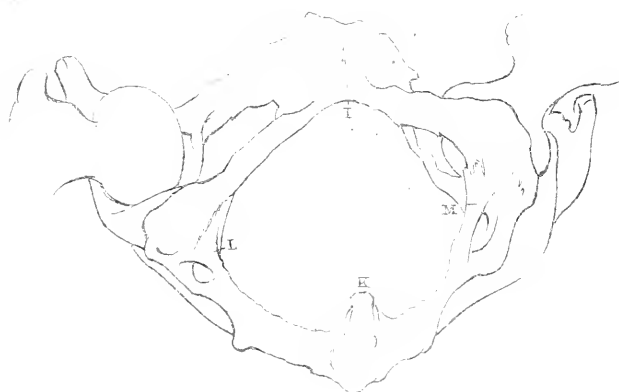


Fig. 2.



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PLATE VII.

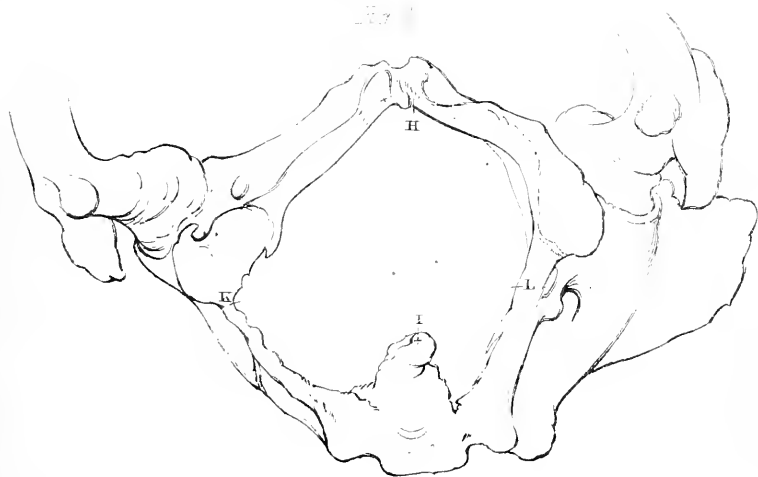
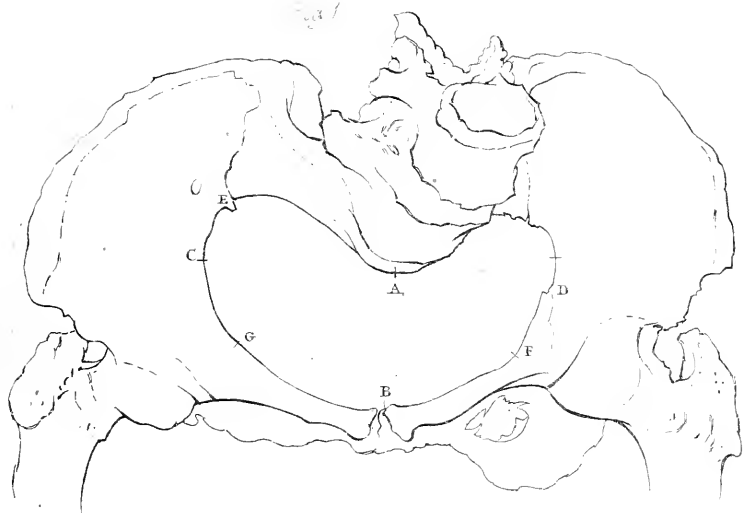
Figure 1st represents the brim of the pelvis of the individual referred to, page 149, on whom, by the late Dr Young's directions, the Cæsarean operation was performed in the Royal Infirmary.

A. B.	2	Inches.
C. D.	$5\frac{1}{4}$	„
E. F.	$4\frac{5}{8}$	„
A. F.	2	„
A. G.	$2\frac{5}{8}$	„

Figure 2d.—Outlet of the same.

H. I.	$3\frac{1}{4}$	„
K. L.	$4\frac{1}{4}$	„

The author's conviction is, that in a case of similar conformation, he successfully performed the operation of embryulcia in presence of Dr O'Brien and Dr Laf-fant, as stated, page 149.



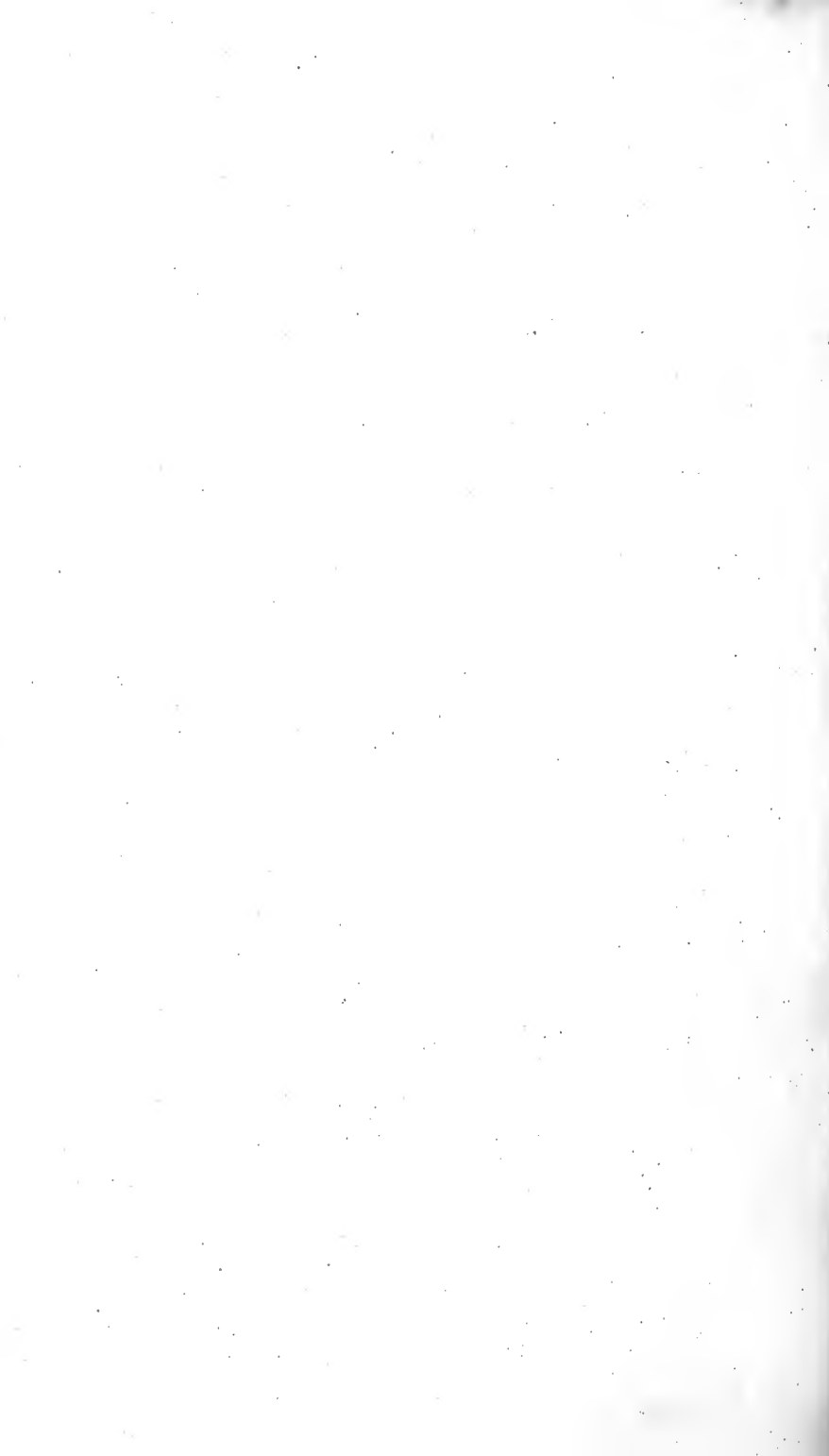


PLATE VIII.

Exhibits the brim and outlet of the pelvis of a woman on whom the author unsuccessfully performed the Cæsarean operation.

Figure 1st.—The brim.

A. B.	$3\frac{1}{2}$	Inches.
C. D.	$4\frac{7}{16}$	„
E. F.	$3\frac{7}{8}$	„
G. H.	$3\frac{1}{2}$	„
A. I.	$2\frac{1}{4}$	„
A. K.	$2\frac{3}{8}$	„

Figure 2d.—The outlet.

L. M.	$3\frac{3}{4}$	Inches.
N. O.	2	„
M. P.	2	„
M. Q.	2	„

Pl VIII

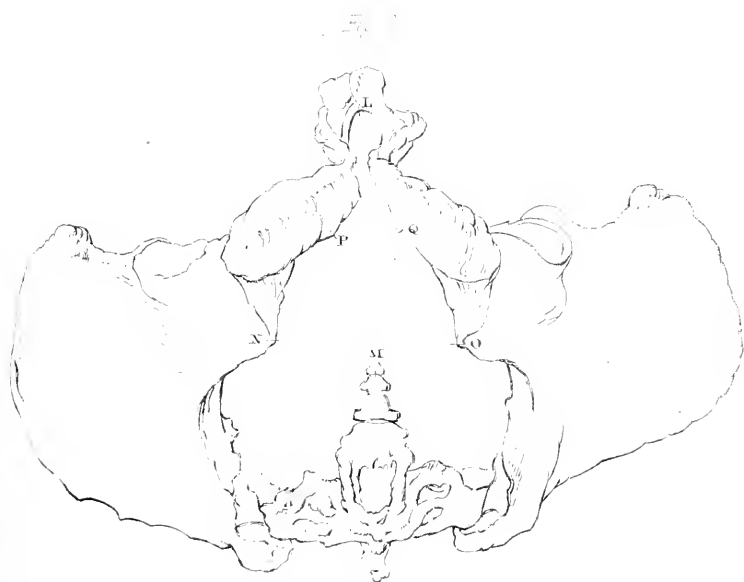




PLATE IX.

Represents the brim and outlet of the pelvis of a woman on whom the Cæsarean operation was unsuccessfully performed in the Royal Infirmary of Edinburgh, under the direction of the late Dr Young.

Figure 1st.—The brim.

A. B.	$3\frac{5}{16}$	Inches.
C. D.	$4\frac{1}{4}$	„
E. F.	$3\frac{3}{4}$	„
G. H.	$3\frac{9}{16}$	„
A. I.	$2\frac{1}{16}$	„
A. K.	$2\frac{5}{16}$	„

Figure 2d.—The outlet.

L. M.	$2\frac{5}{8}$	Inches.
N. O.	$1\frac{1}{16}$	„

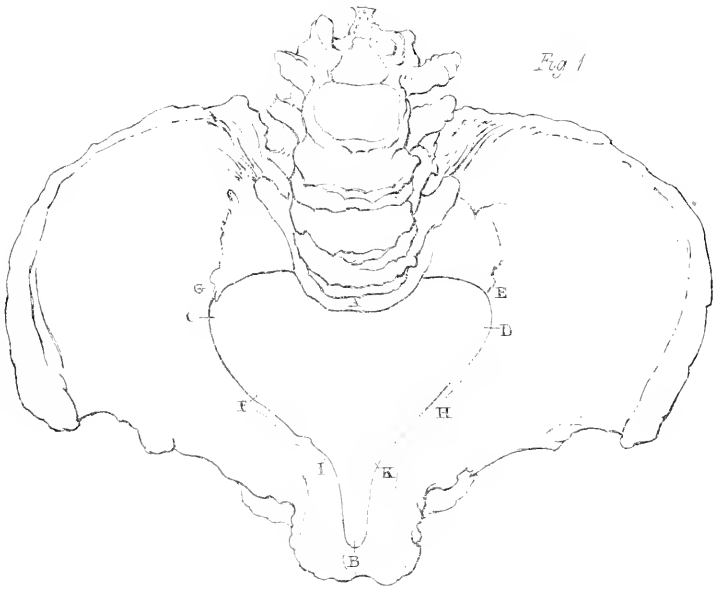


Fig 1



Fig 2

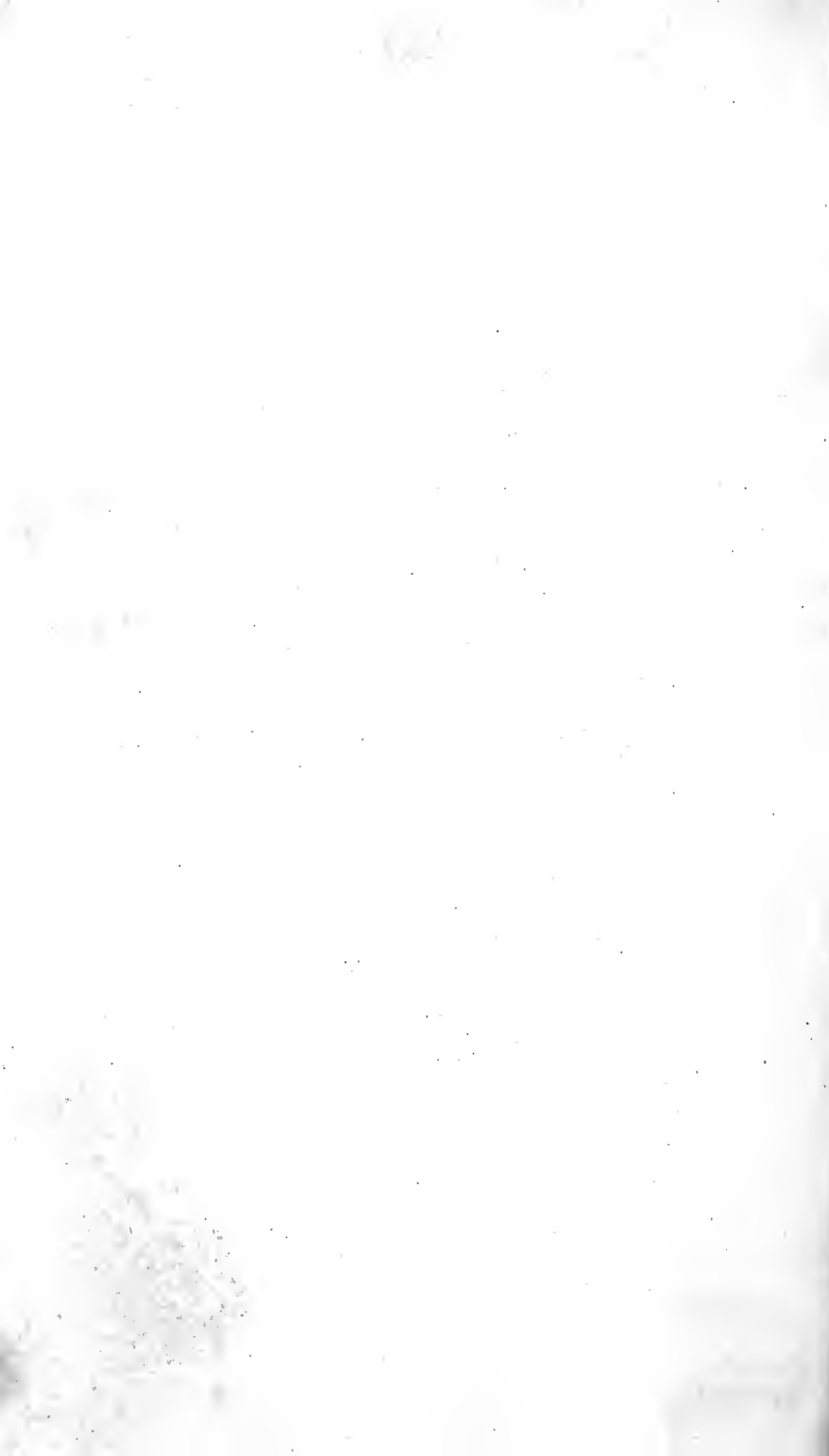




Fig 1.

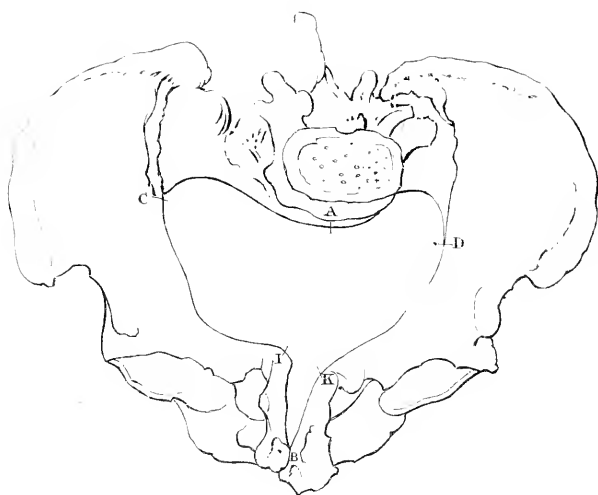


Fig. 2



PLATE X.

Figure 1st represents the brim of the pelvis of another woman on whom the author unsuccessfully performed the Cæsarean operation.

A. B.	$3\frac{1}{4}$	Inches.
C. D.	$4\frac{5}{16}$	„
A. I.	$1\frac{7}{8}$	„
A. K.	$2\frac{1}{8}$	„

Figure 2d represents the brim of the pelvis of Elizabeth Sherwood, according to the following description of Dr Osborne :—

“ Immediately upon the introduction of the finger, I perceived a tumour, equal in size, and not very unlike in the feel, to a child’s head. However, it was instantly discovered that this tumour was formed by the basis of the os sacrum, and last lumbar vertebra, which, projecting into the cavity of the pelvis at the brim, barely left room for one finger to pass between it and the symphysis pubis; so that the space from bone to bone, at that part, could not exceed three quarters of an inch. On the left side of the projection, quite to the ileum, which was about two inches and a half in length, the space was certainly not wider; and, indeed, by some of the gentlemen who examined her after-

wards, it was thought to be narrower. On the right side, the aperture was rather more than two inches in length, from the protuberance to the ileum; and as it admitted the points of three fingers (lying over each other) in the widest part, it might, at the utmost, be about one inch and three quarters from the hind to the fore part; but it became gradually narrower, both towards the ileum, and towards the projection."

On examining the plate, a curious error will be discovered. The artist, in drawing from the above description, has represented the narrow side of the pelvis towards his own left hand, instead of the left side of the subject. In a practical point of view this is of little importance, the object of the representation being, to shew the alleged dimensions of the brim of Sherwood's pelvis.



PLATE XI.

Represents the brim and outlet of the pelvis of Scott,
whose case is referred to, page 151.

Figure 1st.—The brim.

A. B.	$3\frac{3}{8}$	Inches.
C. D.	$4\frac{9}{16}$	„
E. F.	$3\frac{7}{8}$	„
G. H.	$3\frac{7}{8}$	„
A. I.	2	„
A. K.	$2\frac{1}{4}$	„
A. F.	$3\frac{7}{8}$	„

Figure 2d.—The outlet.

L. M.	$4\frac{5}{16}$	Inches.
M. N.	$2\frac{5}{8}$	„
O. P.	$2\frac{3}{8}$	„

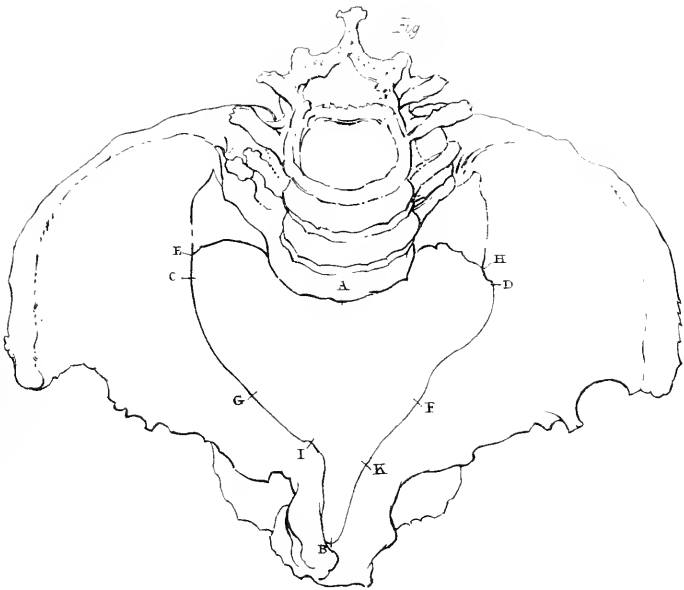


Fig. 2



PLATE XII.

Represents the skeleton of a pelvis in the author's collection, which was purchased in Paris in 1775, under the assurance that the individual had been unsuccessfully delivered by the Cæsarean operation.

Figure 1st.—The brim.

A. B.	$2\frac{1}{4}$	Inches.
C. D.	$3\frac{7}{8}$	„
E. F.	$3\frac{5}{8}$	„
G H.	$3\frac{5}{16}$	„
A. K.	1	„
A. L.	$1\frac{7}{16}$	„

Figure 2d.—The outlet.

M. N.	$2\frac{3}{4}$	Inches.
O. P.	$3\frac{3}{8}$	„

Fig. 1

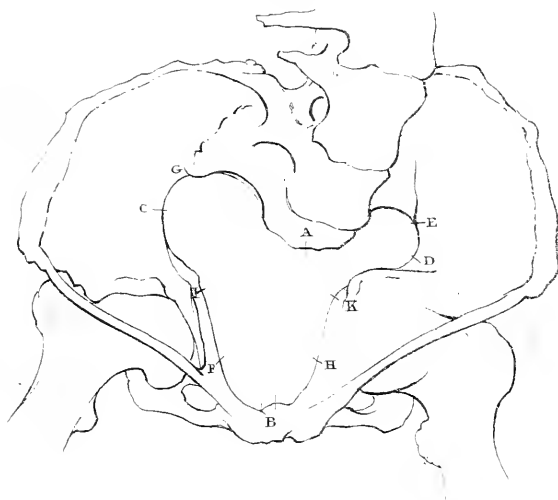


Fig. 2.

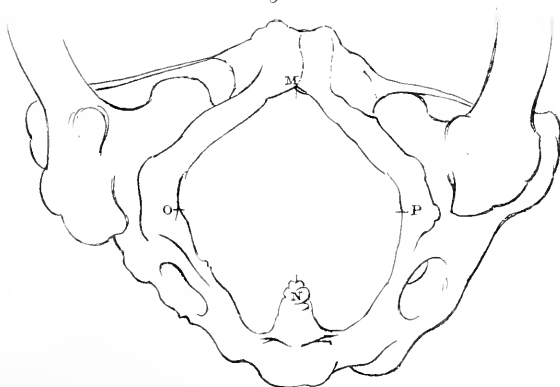






PLATE XIII.

Represents the brim and outlet of a cast taken from the pelvis of one of the women on whom the Cæsarean operation was unsuccessfully performed during the last century, in London.

Figure 1st.—The brim.

A. B. $1\frac{9}{16}$ Inches.

C. D. $5\frac{3}{4}$ „

Figure 2d.—The outlet.

E. F. $1\frac{5}{8}$ „

G. H. $5\frac{1}{2}$ „

Fig 1

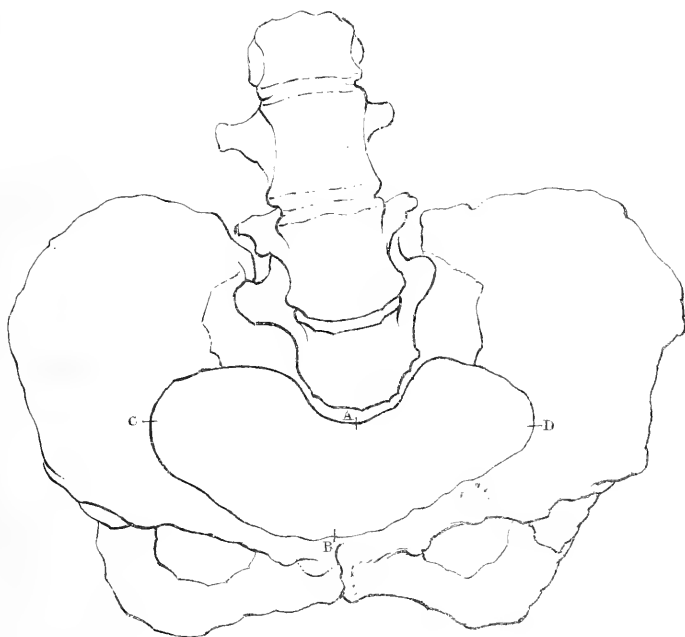


Fig 2.

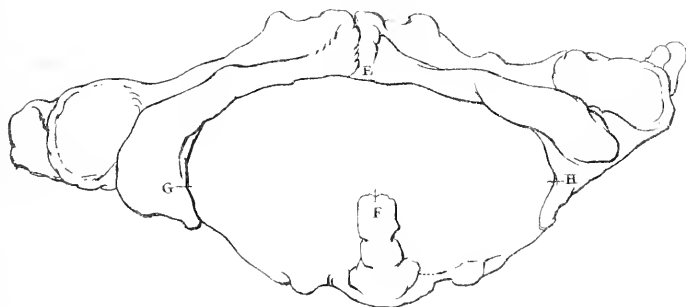






PLATE XIV.

Represents the brim and outlet of another cast taken from the pelvis of another woman on whom the Cæsa-rean operation had been unsuccessfully performed in London.

Figure 1st.—The brim.

A. B.	$2\frac{1}{2}$	Inches.
C. D.	$4\frac{5}{8}$	„
A. E.	$1\frac{3}{8}$	„
A. F.	$1\frac{5}{8}$	„

Figure 2d.—The outlet.

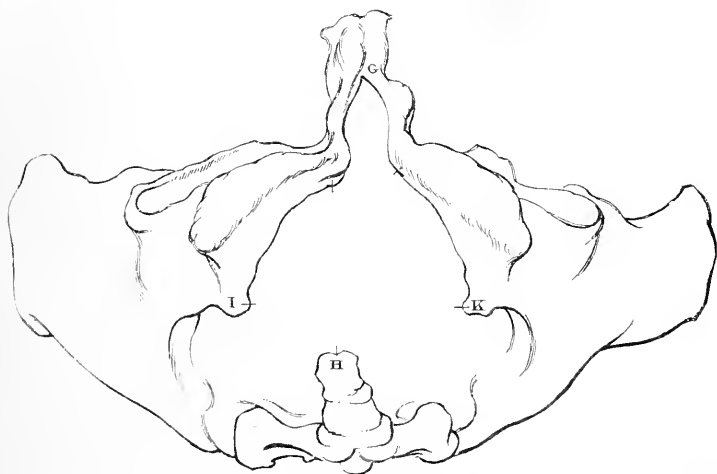
G. H.	$3\frac{7}{8}$	Inches.
I. K.	$3\frac{1}{4}$	„

Pl XIV.

Fig. 1.



Fig. 2.



C. Hallman's Lithography.



PLATE XV.

Represents the brim and outlet of a cast taken from the individual on whom the Cæsarean operation was performed in Manchester, after Mr Simmons had declared that she could be delivered by the crotchet.

Figure 1st.—The brim.

A. B. $1\frac{1}{16}$ Inches.

C. D. $4\frac{1}{2}$ „

A. F. $\frac{9}{16}$ „

Figure 2d.—The outlet.

G. H. $2\frac{3}{4}$ Inches.

I. K. 3 „

Fig 1

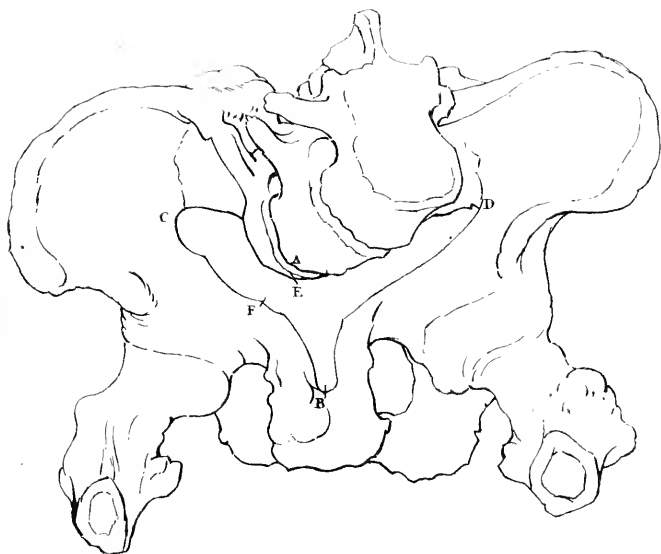


Fig 2

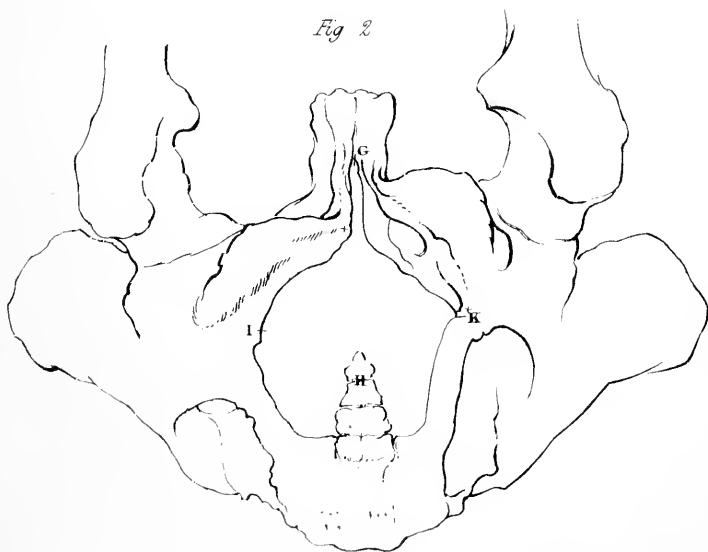




PLATE XVI.

Represents the brim and outlet of the pelvis, in the author's collection, of the individual on whom the late Dr Kelly of Leith performed the Cæsarean operation.

Figure 1st.—The brim.

A. B.	$2\frac{3}{8}$	Inches.
C. D.	$4\frac{3}{8}$	„
A. E.	1	„
A. G.	$1\frac{3}{8}$	„

Figure 2d.	H. I.	$3\frac{5}{8}$	„
	I. M.	$2\frac{7}{8}$	„
	K. L.	$3\frac{1}{8}$	„

Feb 1



Fig 2.





PLATE XVII.

Represents the brim and outlet of the pelvis, in the author's collection, of the individual on whom the late Dr Henderson of Perth performed the Cæsarean operation.

Figure 1st.—The brim.

A. B.	$1\frac{3}{4}$	Inches.
C. D.	$\frac{3}{4}$	„
E. F.	$\frac{1\frac{3}{8}}{16}$	„
G. H.	$1\frac{9}{16}$	„

Figure 2d.—The outlet.

I. K.	2	Inches.
K. L.	1	„
M. N.	$2\frac{5}{16}$	„

Fig 1



Fig 2



ERRATA.

<i>Page</i>	<i>Line</i>
22	19, <i>for</i> Fahrnheit, <i>read</i> Fahrenheit.
26	19, <i>for</i> beginning, <i>read</i> incipient.
27	5, <i>for</i> chylopoetic, <i>read</i> chylopoietic.
28	19, <i>for</i> nutritious, <i>read</i> nutritious.
53	20, <i>for</i> odema, <i>read</i> œdema.
61	foot-note, line 6, <i>for</i> thus, <i>read</i> then.
101	19, <i>for</i> Collin's <i>read</i> Collins.
124	4, <i>for</i> œdema, <i>read</i> œdema.
126	18, <i>for</i> ilea, <i>read</i> ilia.
130	1, <i>for</i> between pubes, <i>read</i> between the pubes.
155	3, <i>for</i> innosninata, <i>read</i> innominata.
192	foot-note, line 4, <i>for</i> prematurely, <i>read</i> preternaturally.
280	bottom line, <i>for</i> sunk, <i>read</i> sank.
328	11, <i>for</i> were taken, <i>read</i> taken away.
391	11, <i>for</i> breath, <i>read</i> breathe.



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